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THE THELEPHORACEAE OF NORTH AMERICA. XII[1]

STEREUM

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STEREUM

Stereum Persoon, Roemer Neues Mag. Bot. **1**: 110. 1794; Obs. Myc. **1**: 35. 1797, and **2**: 90. 1799; Fries, Obs. Myc. **1**: 274. 1815, Gen. Hym. 14. 1836, Epicr. 545. 1838; Hym. Eur. 638. 1874; Berkeley, Brit. Fung. 270. 1860; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 193. 1888; Sacc. Syll. Fung. **6**: 551. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 158. 1890; Engl. & Prantl, Nat. Pflanzenfam. (**1**: 1**): 123. 1898.—*B. Sterea* of *Thelephora*, Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 105. 1822.—****Stereum* of *Thelephora*, Persoon, Myc. Eur. 1: 116. 1822.—Includes *Podoscypha* Patouillard in Duss, Fl. Crypt. Antilles Fr. 230. 1904.—Includes *Lloydella* Bresadola in Lloyd, Myc. Writ. **1**. Myc. Notes 6: 51. 1901; Sacc. Syll. Fung. **16**: 1116. 1902.—Includes *Bresadolina* Brinkmann, Ann. Myc. **7**: 289. 1909.

Fructifications coriaceous to hard, stipitate, dimidiate or effuso-reflexed; hymenium inferior, not containing setae; intermediate layer of longitudinally arranged hyphae normally present; basidia simple; spores white, even—rough in but few instances.

The species mentioned or described as belonging in *Stereum*

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upon its publication are *Stereum hirsutum*, *S. striatum*, *S. purpureum*, *S. nitidum*, and *S. rugosum*, no one of which was designated as the type species.

The species of *Stereum* are here arranged in the usual sections of central-stemmed, lateral-stemmed, merismatoid, and dimidiate and effuso-reflexed species; these sections are convenient for locating species approximately, but one should bear in mind that some species are ambiguous with regard to sectional characters; all the species are probably so variable that individuals may be selected from most gatherings which will prove very misleading for study. For example, *Stereum fasciatum* is properly included in the section of effuso-reflexed species, yet fructifications of this species do occur now and then with elongation of the umbo so great as to lead one to regard such a fructification as lateral-stemmed.

While *Stereum* is a large genus in the number of its North American species, its difficulty is not proportional to the number of species, for the species of each of its several sections differ among themselves microscopically in the absence or presence of definite recognizable organs or combinations of organs, such as conducting organs containing latex (milk), vesicular organs, gloeocystidia, cystidia of various kinds, and noteworthy paraphyses. In the determination of any species, one's effort is soon concentrated upon a small group of four or five species of common structure, some of which may be eliminated by geographic range, spore dimensions, etc. The structural features have been very important in working out the extensive multiplication of species which had arisen in this genus through disregard of the work of earlier mycologists.

As heretofore noted in the case of *Hymenochaete*, the east and west range of the species of *Stereum* is marked in comparison with north and south range; of our 77 species, only 7 range over both north temperate and tropical areas; the other 70 may be arranged in two groups, of which the 29 species comprising the northern group are in the region from Canada to the Gulf states; the other 41 species range from the Gulf states southward. The Gulf states are a region in which northern and southern species overlap in range. The excess of tropical and subtropical species over northern species is due to the small number of northern

stipitate and merismatoid species, of which we have only 5 as against 23 in the warmer southern region. The stipitate and merismatoid species grow sometimes on dead wood and sometimes on the ground; all 49 dimidiate and effuso-reflexed species grow on dead wood, causing its decay, and are distributed 24 in the northern and 18 in the southern area, while 7 others are the species already mentioned as ranging over both north temperate and tropical areas.

Key to the Species

§I. Central-stemmed species.—Pileus more or less infundibuliform, sometimes deeply split on one side, usually stipitate; stem typically central or eccentric but lateral-stemmed forms are also present in many of the species 1

§II. Lateral-stemmed species.—Pileus dimidiate, flabelliform, or wedge-shaped—never infundibuliform—attenuated at the base into a more or less distinct stem 9

§III. Merismatoid species.—Pileoli several, somewhat infundibuliform, wedge-shaped, or strap-shaped, borne on or along a common stem 12

§IV. Sessile species, wholly lacking stem or stem-like base.—Pileus dimidiate-sessile, umbonate-sessile, or reflexed, all growing on wood—many typically reflexed species may sometimes occur wholly resupinate 13

§I. CENTRAL-STEMMED SPECIES

1. Fructifications solitary or gregarious 2
1. Fructifications cespitose 8
2. Species with pileus always more or less infundibuliform, lacking dimidiate or other lateral-stemmed forms 3
2, Species having lateral-stemmed forms occurring more or less frequently in collections 5
3. Neither cystidia nor gloeocystidia present; stem not radicated 4
3. Gloeocystidia present; growing on the ground, 1½–3 cm. high, 3 mm.–2 cm. in diameter; in South Carolina to Brazil . . . . . *3. S. Ravenelii*
3. Gloeocystidia present; growing on wood; in West Indies to Dutch Guiana . . . . . *4. S. surinamense*
3. Hair-like cystidia present; pileus white, 2–4 cm. high; in New York to Missouri, and in Alabama, Washington and California . . . . . *10. S. diaphanum*
3. Hair-like cystidia present; pileus slightly darker than *S. diaphanum*, 3–5 mm. high; in New York . . . . . *11. S. exiguum*
3. Hymenial organs unknown; growing on the ground, with stem continued by a long radicated portion which penetrates deeply; in French Guiana . . . . . *5. S. macrorrhiza*
4. Growing on wood, 2–15 cm. high and in diameter; upper surface with raised, radial ridges; in Gulf states to Bolivia . . . . . *1. S. caperatum*
4. Growing on wood, 6–11 cm. high and in diameter; upper surface not ridged; pileus and stem velvety; in South America . . . *2. S. hydrophorum*
5. Neither cystidia nor gloeocystidia present; pileus cartridge-buff to pinard-yellow when fresh; in New Hampshire to North Carolina and Tennessee, and in Japan . . . . . *6. S. Burtianum*
5. Hymenial organs unknown; pileus "straw-colored," 1½ mm. in diameter; stem 4 mm. high; growing on wet ground among moss in Cuba . . . . . *7. S. rivulorum*
5. Cystidia present 6
5. Gloeocystidia present; no cystidia 7
6. Pileus white, of soft, bibulous texture, 3–5 mm. broad, 5–7 mm. long; on bark and mosses in Cuba . . . . . *8. S. quisquiliare*

6. Pileus drying bright yellow, finally fading in the herbarium, of bibulous texture; in West Indies to Paraguay ..... *9. S. aurantiacum*
6. Pileus drying tawny olive to Saccardo's umber, not of bibulous texture but coriaceous-hard instead; lateral-stemmed forms are the more common; 5 mm.–2½ cm. high, 2–10 mm. broad; in New York to Cuba, and in Wisconsin ..... *12. S. tenerrimum*

7. Somewhat cespitose, obscurely zonate, not bearing a cluster of coarse processes near base of the pileus, 1½–4 cm. high, 8 mm.–3 cm. in diameter; in Ohio and North Carolina to Mexico and West Indies ..... *13. S. pergamenum*
7. With a crest of coarse hairs or processes towards base of the pileus; pileus 6–10 mm. across; on dead *Vitis* in South Carolina ..... *14. S. cristatum*
8. Hair-like cystidia more or less numerous but no gloeocystidia; pileus cartridge-buff, strigose-squamose; on the ground, Vermont to North Carolina, and in Europe ..... *15. S. pallidum*
8. Gloeocystidia barely distinguishable, but no cystidia; pileus plicate on both surfaces, with the upper diamine-brown and the hymenium white; on the ground, Porto Rico to British Guiana ... *16. S. elegans*
8. Gloeocystidia present but no cystidia; pileus drying pale cinnamon; on dead wood, Jamaica to Trinidad ..... *17. S. decolorans*

§II. LATERAL-STEMMED SPECIES

9. Fructifications not cespitose 10
9. Fructifications cespitose; pileate segments pectinate along their margins; on decaying wood, Carolina to Bolivia ..... *24. S. Hartmanni*
9. Fructifications rarely cespitose, usually gregarious; margin of pileus thick and entire; spores 6×5μ, becoming subangular; in Jamaica to Dutch Guiana ..... *18. S. radicans*
10. Growing on ground; pileus white when fresh, drying smoke-gray, not zonate; spores 4–5½×3–5μ; in West Indies ..... *19. S. pusiolum*
10. Growing on dead wood; pileus of soft bibulous texture, drying pinkish buff, 3–6 mm. wide, 5–7 mm. long; in Cuba and Porto Rico ..... *23 S. cyphelloides*
10. Growing on dead wood; pileus not of soft bibulous texture 11

11. Pileus drying Verona-brown to chestnut, minutely velvety; stem velvety; spores 4–5×3–4μ; in the West Indies ..... *20. S. glabrescens*
11. Pileus whitish when living, livid and pellucid upon drying, 4–6 cm. high, with stem ½–1 cm. long; in Guadeloupe ..... *21. S. flabellatum*
11. Pileus white when fresh, drying "reddish brown," 8–15 mm. long, 3–15 mm. broad, often deeply split into segments; in Brazil ..... *22. S. fissum*

§III. MERISMATOID SPECIES

12. Densely cespitose and concrescent throughout into a cluster 7 cm. in diameter, with color and aspect of *Tremellodendron pallidum;* in Mexico and Dutch Guiana ..... *25. S. craspedium*
12. Fructification a sessile, rosette-shaped mass of reddish brown pileate flaps; in San Domingo ..... *26. S. petalodes*
12. Fructification stipitate, white, with many pileate divisions extending out from a common stem; with aspect of doubled forms of *Thelephora caryophyllea* but white; in Cuba ..... *27. S. anastomosans*
12. Fructifications cespitose, somewhat creeping by tips of branches becoming attached to the matrix by disks; pileate branches 1–1½ cm. long, 1–2 mm. broad; in Brazil ..... *28. S. proliferum*

§IV. EFFUSO-REFLEXED SPECIES

13. Hyaline, flexuous gloeocystidia conspicuous in the subhymenium and hymenium 15
13. Pyriform, vesicular organs present in trama, subhymenium, or hymenium ... 16
13. Colored conducting organs in trama, subhymenium, or hymenium; cystidia absent; hymenium bleeds when wounded, if in vegetative condition. *S. hirsutum* and *S. rameale* sometimes have occasional colored conducting organs in the hymenium 17

13. Not having gloeocystidia, vesicular organs, nor colored conducting organs.. 14
14. Hymenium lacking cystidia and paraphyses of noteworthy form or color..... 18
14. Cystidia present, incrusted or without incrustation and hair-like, hyaline, or colored..... 22
14. Paraphyses noteworthy by bottle-brush form, branching, or color. For species having cystidia in addition to noteworthy paraphyses, see 27..... 28
15. Coriaceous, dense, tawny, zonate, not sulcate, thin, 5–10 mm. in diameter; in Jamaica.....*29. S. caespitosum*
15. Soft, spongy, snuff-brown to bister, concentrically sulcate, reflexed 1–4 cm.; of wide range.....*30. S. fuscum*
15. Coriaceous-fleshy, bursting out from the bark, wart-like, peltate, vinaceous-brown, 2–4 mm. in diameter; no cystidia; on poplar.....*31. S. rufum*
15. Coriaceous-cartilaginous, shield-shaped, wood-brown, 1–4 mm. in diameter; cystidia present; on pine.....*32. S. Pini*
16. Coriaceous-soft, tomentose, lacking cystidia.....*33. S. purpureum*
16. Coriaceous-soft, tomentose, often with hairs becoming agglutinate into a rugose surface; hair-like cystidia present..*34. S. rugosiusculum*
16. Corky, usually resupinate, sometimes reflexed and with the upper side a horny crust; vesicular bodies very numerous.....*35. S. Murrayi*
16. Stony hard throughout, the cut surface with a horn-like luster, 1–5 mm. thick; vesicular bodies few; in Mexico and Jamaica..*36. S. saxitas*
17. Exuding a yellow milk, conducting organs of pale color; narrowly reflexed, tomentose; on *Liquidambar* and *Carpinus* in North Carolina and Alabama.....*37. S. styracifluum*
17. Milk red, conducting organs dark, numerous; fructifications cespitose-imbricated, villose to hirsute, tobacco-colored; on oak, Canada to Alabama and westward.....*38. S. gausapatum*
17. Milk red, conducting organs few; fructifications tomentose, concentrically sulcate, not cespitose; Florida to Brazil.....*39. S. australe*
17. Milk red, conducting organs dark, numerous; fructifications narrowly reflexed; hymenium multizonate; on frondose species, Newfoundland to North Carolina.....*40. S. rugosum*
17. Milk red, conducting organs numerous; on pine, spruce, and hemlock, Canada to Pennsylvania and westward to the Pacific coast.*41. S. sanguinolentum*
18. Fructifications sulphur-colored, fading to cartridge-buff; intermediate layer not bordered by a golden, denser zone; Georgia to Brazil, and in Germany.....*42. S. sulphuratum*
18. Fructifications at first some shade of buff by reason of the hairy covering, becoming grayish with age, and at length often zonate and shining where disappearance of the hairy covering reveals the hardened, colored surface of the intermediate layer..... 19
18. Fructifications white or whitish to cartridge-buff..... 20
18. Fructifications snuff-brown or black above..... 21
19. Effuso-reflexed, cream-buff at first, strigose-hirsute; hymenium warm buff, sometimes pale smoke-gray; intermediate layer bordered by a narrow golden zone; colored conducting organs rarely present in the hymenium; Newfoundland to South Carolina and westward to the Pacific coast. .....*43. S. hirsutum*
19. Effuso-reflexed at first, becoming umbonate-sessile, tomentose, sometimes with the tomentum becoming torn into narrow concentric bands and showing the bared surface chestnut in the furrows; margin not normally lobate; fructifications 2–7 cm. in diameter; common throughout North America.....*44. S. fasciatum*
19. Wedge-shaped to umbonate-sessile, with a thinner covering of tomentum than *S. fasciatum*, becoming more bared and zonate than the latter, thinner and flexible, and with the margin normally cut into 2 or 3 large lobes; New York and Wisconsin southward to Brazil.....*45. S. lobatum*
19. Covering of silky, villous fascicles arranged radially, becoming glabrous, shining, and radially ridged, not lobed nor folded together laterally, nor crisped; Florida to Dutch Guiana.....*46. S. versicolor*
19. Pilei 2–10 mm. long and broad, crowded together and folded or crisped, strigose-hairy towards the base; marginal portion shining and zoned,

cinnamon-buff to hazel; colored conducting organs occasionally present ..... *47. S. rameale*

20. Fructifications 1–1½ cm. in diameter, plane, thin, papery, silvery to pale gray and with a silky luster; common on *Carpinus*, Canada, eastern United States to Mexico ..... *48. S. sericeum*
20. Fructifications 3–10 mm. in diameter, pubescent, white. *49. S. pubescens*
20. *S. ochroleucum*, an imperfectly known species of Europe, formerly reported in America, belongs here. For description of authentic specimen, see "species imperfectly known."
20. Fructifications 2–4 mm. in diameter, conical, attached by the vertex and pendant, villose; Cuba ..... *50. S. conicum*
21. Tobacco-colored, velvety-hirsute, becoming glabrous towards the margin and exposing the blackish, horny crust of the intermediate layer; hymenium pruinose; spores 4–5×2½–3μ; West Indies ..... *51. S. vibrans*
21. Villose, blackening; intermediate layer not bordered by a crust; spores 9×4μ; Mexico ..... *52. S. crassum*
21. Velutinous and black above; coloring matter of intermediate layer dissolved by KHO solution; hymenium ferruginous, radiately ridged; on coniferous wood, in northern United States ..... *53. S. radiatum*
22. Cystidia hyaline, non-incrusted, hair-like 23
22. Cystidia dark, or becoming dark, cylindric, obtuse, distinguishable from colored conducting organs by more or less granule-incrustation; on conifers only 24
22. Cystidia rough-walled or incrusted, somewhat colored either wholly or under the incrustation, pointed, not resembling conducting organs 25
22. Cystidia incrusted, not at all colored except in *S. cinerascens* at times; paraphyses not noteworthy 26
22. Cystidia incrusted, not colored; paraphyses noteworthy by color or form 27
23. Cinnamon to bone-brown, hoary; hair-like cystidia very few; spores 9–10×3–4μ; Washington to New Mexico ..... *54. S. patelliforme*
23. White, villose-tomentose; hymenium bright yellow; hair-like cystidia obtuse, 20–25×4–6μ, numerous ..... *55. S. ochraceo-flavum*
24. Coriaceous-spongy, dry, usually resupinate; hymenium pruinose, multizonate; cystidia colored, cylindric, 90–150×6–8μ; spores 9–13×4–5μ; northern United States ..... *56. S. abietinum*
24. Very thick, felty, concentrically sulcate, drying with odor of anise; cystidia and basidiospores like those of *S. abietinum;* colored imbedded spores often present; Rocky Mountain states ..... *57. S. rugisporum*
24. Narrowly reflexed, tomentose, Prout's brown; hymenium umber; cystidia and spores as in *S. abietinum;* Vermont and New York. ..... *58. S. ambiguum*
25. Vinaceous-lilac when young, becoming snuff-brown; cystidia colored, even, rough-walled or incrusted, 100–200×6–10μ; from North Carolina and Ohio southward ..... *59. S. umbrinum*
25. Coriaceous-papery, thin, pliant, tomentose, concentrically sulcate, snuff-brown; hymenium velvety, snuff-brown, not multizonate; cystidia colored under the incrustation, conical, 30–75×12–25μ; Florida to Brazil. ..... *60. S. papyrinum*
25. With aspect of *S. papyrinum* but thinner; cystidia 45–60×5–12μ; hymenial layer 200μ thick; Jamaica ..... *61. S. Earlei*
25. Coriaceous, tomentose, concentrically sulcate, hair-brown; cystidia slightly colored, roughened above, 50–120×4½μ; on conifers, northern United States and Canada, and in Rocky Mountains ..... *62. S. Chailletii*
25. Corky, usually resupinate, 1100μ thick; hymenium drab, 600μ thick, containing innumerable, colored, rough cystidia 20–25×5–7μ; West Indies. ..... *63. S. ferreum*
26. Strigose-hairy, concentrically sulcate, buff, weathering gray; hymenium pinkish buff to drab, bristling with cystidia 100–150×12–20μ, sometimes brownish at the base; spores 10–12×6μ. . *64. S. cinerascens*
26. Coriaceous-gelatinous, small, whitish; cystidia 45–90×12–15μ; spores 15–20×12–14μ; Jamaica ..... *65. S. magnisporum*

26. Spongy-soft, tomentose; cystidia 36–60×9–12μ; spores 5–9×3–4μ; New York to Mexico ..... *66. S. spumeum*
26. Bursting out from the bark, forming a gray hymenium and becoming reflexed, 1–2½ mm. in diameter ..... *67. S. erumpens*
26. Corky, rigid, concentrically sulcate, bister; hymenium ruddy, becoming zonate; cystidia 30–50×8–12μ; spores 4–6×3–5μ; on hemlock and other conifers, Canada to Texas and westward to the Pacific coast ..... *68. S. sulcatum*
26. Tobacco-colored and sulcate above, with a horn-like crust under the tomentum; hymenium whitish; cystidia 30–36×7μ; on oak, North Carolina and Ohio to Mexico ..... *69. S. subpileatum*
27. With aspect of *S. subpileatum* as given above, but hymenium contains numerous and conspicuous bottle-brush paraphyses in addition to cystidia; Pennsylvania to Colombia ..... *70. S. sepium*
27. With brown, velvety hymenium and a white margin; paraphyses filiform, colored; spores hyaline, 6–11×3–4½μ ..... *71. S. albobadium*
27. With aspect of dark specimens of *S. albobadium*, but with thicker, zonate hymenium and imbedded spores colored; Oregon to Mexico ..... *72. S. heterosporum*
27. Becoming narrowly reflexed, fuscous, 2–10 mm. in diameter; hymenium velvety, bister; paraphyses colored, with bushy-branched tips; Canada to Alabama and Arkansas ..... *73. S. versiforme*
    28. Snuff-brown and sulcate above, tomentose; hymenium pruinose, zoned, containing bottle-brush paraphyses; on oak, Florida and Venezuela ..... *74. S. insigne*
    28. Fuscous, sulcate, not tomentose but with upper surface a horn-like crust, 2–3 mm. thick; Mexico ..... *75. S. durum*
    28. Woody, resupinate, crowded as if confluent and then broken into frustules, 2–4 mm. in diameter, above black and crust-like; hymenium pinkish buff to whitish and pruinose; on oak ..... *76. S. frustulosum*
    28. Usually resupinate, coriaceous-soft; hymenium light vinaceous-purple when young, becoming avellaneous, containing filiform paraphyses with short lateral prongs; aspect of *Corticium evolvens;* Canada to North Carolina ..... *77. S. roseo-carneum*

1. Stereum caperatum (Berk. & Mont.) Massee, Linn. Soc. Bot. Jour. **27:** 161. 1890; Lloyd, Myc. Writ. **4.** Stip. Stereums, 17. *text f. 531.* 1913. Plate 2, fig. 1.

Thelephora caperata Berkeley & Montagne, Ann. Sci. Nat. Bot. III. **11:** 241. 1849; Montagne, Syll. Crypt. 175. 1856; Sacc. Syll. Fung. **6:** 523. 1888.

Illustrations: Lloyd, *loc. cit.;* Engl. & Prantl, Nat. Pflanzenfam. (**1:** 1**): 124. *f. H–J.*

Type: in Kew Herb.

Pileus coracelous, infundibuliform, drying pinkish buff, the upper side with elevated radial ridges and usually densely tomentose with coarse fibers; in structure 600–700 μ thick, composed of densely, longitudinally arranged, thick-walled, hyaline hyphae 3 μ in diameter; stem central or sometimes absent, with attachment by a tomentose disk; hymenium pale pinkish buff, somewhat radially rugose, glabrous; hair-like cystidia not incrusted, 3–4½ μ in diameter. flexuous, often constricted near the outer end,

protruding up to 12 μ, are sometimes present; spores hyaline, even, 8–10×3–4½ μ.

Fructifications 2–10 cm. high, 2–15 cm. in diameter; stem, when present, 5 mm. – 2 cm. long, 2–5 mm. thick, often sessile.

On decaying wood of frondose species. Florida, Louisiana, and West Indies to Bolivia. June to April, probably throughout the year. Common.

S. caperatum is the largest infundibuliform *Stereum* of the Gulf states and the West Indies. Its large size, upper surface with elevated, radial ridges and usually heavy tomentum of coarse fibers, occurrence on wood to which it is attached by a villose or tomentose disk, constitute a group of characters by which the *S. caperatum* is readily recognized. Lloyd has published in his account of this species that it has true metuloids (incrusted cystidia) projecting 20–30 μ, but I have found none whatever in either the type or in other collections referable to this species.

Thelephora lamellata Berk. & Curtis, a species of *Stereum* related to *S. caperatum* and of rather similar aspect, occurring on islands of the Pacific, shows in the type specimen from Fiji Islands conical incrusted cystidia 6–12 μ in diameter, protruding 12–25 μ, and subglobose spores 3–3½×3μ. Since Lloyd cited *S. caperatum* as occurring in Samoa, the Philippines, and Australia, it is possible that his observations on incrusted cystidia of *S. caperatum* were based on specimens from the Pacific region really referable to *Stereum lamellatum* rather than on the true *S. caperatum* from the American continent. In Hedwigia **53**: 75, 1913, Bresadola gives *T. lamellata* as a synonym of *Cladoderris infundibuliformis* (Kl.) Fries. I have seen no American specimens referable to *S. lamellatum*.

Specimens examined:

Florida: New Smyrna, *A. S. Bertolet;* Ocala, *W. H. Long, 12373* (in Mo. Bot. Gard. Herb., 55125).

Louisiana: *A. B. Langlois*, comm. by C. G. Lloyd, 2740; St. Martinville, *A. B. Langlois, 2896* and an *unnumbered specimen, C. J. Humphrey, 2518* (in Mo. Bot. Gard. Herb., 5111).

Cuba: *C. Wright, 290, 509* (in Kew Herb.); Candelaria, *Earle & Wilson, 201;* Guantanamo (in Weir Herb., 10858);

Havana Province, *P. Wilson, 1172*, comm. by F. S. Earle; Herradura, *Earle & Murrill, 180*, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Manati, *Johnston & Stevenson, 2006* (in Mo. Bot. Gard. Herb., 3396).

San Domingo: *259* (in Kew Herb.).

Jamaica: Cinchona, *L. M. Underwood, 3172* (in N. Y. Bot. Gard. Herb. and in Mo. Bot. Gard. Herb., 56271); Cockpit Country, *E. G. Britton & D. W. Marble, 338* (in N. Y. Bot. Gard. Herb.).

St. Kitts: Lambert Estate, *N. L. Britton & J. F. Cowell, 672* (in N. Y. Bot. Gard. Herb.).

Brazil: Bahia, *Blanchet, 19* (in Kew Herb.).

Bolivia: Yungas, *A. Miguel Bang, 295* (in Mo. Bot. Gard. Herb.).

2. S. hydrophorum Berkeley, Ann. & Mag. Nat. Hist. I. **14:** 327. *pl. 9. f. 2.* 1844; Hooker's Jour. Bot. **8:** 273. *pl. 6.* 1856; Sacc. Syll. Fung. **6:** 555. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 159. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 29. *text f. 547, 548.* 1913. Plate 2, fig. 2.

Hymenochaete crateriformis P. Hennings, Hedwigia **43:** 172. 1904; Sacc. Syll. Fung. **17:** 166. 1905.

Illustrations: Ann. & Mag. Nat. Hist. I. 14: *pl. 9. f. 2;* Hooker's Jour. Bot. **8:** *pl. 6;* Lloyd, *loc. cit.*

Type: in Kew Herb.

Pileus stipitate, coriaceous, infundibuliform, drying Prout's brown, obscurely zonate, velvety, sometimes bearing large, branched hairs at the center and bottom of the cups, the margin entire; stem central, cylindric, solid, velvety, colored like the pileus, enlarged at the base and attached by disk; hymenium even, drying snuff-brown, not setulose; in structure 600 μ thick, composed of intermixed and interwoven hyaline and slightly colored hyphae, the latter of which give their color to the pileus and hymenium and curve into the hymenium as cylindric, obtuse, slightly colored paraphyses 3 μ in diameter, not emergent above its surface; no cystidia, gloeocystidia, nor setae; spores hyaline, globose, even, 3 μ in diameter.

Pileus 4–10 cm. in diameter, 3–6 cm. deep; stem 3–5 cm. long, 4–5 mm. thick.

On wood on the ground. Venezuela, British Guiana, and Brazil. November.

This South American species ranges so far to the north that it may possibly occur also in the West Indies or Central America. The fructifications have dimensions and general aspect of those of *S. caperatum* but are distinguishable by darker color of pileus, stem and hymenium, by velvety covering of pileus and stem, and by absence of elevated longitudinal ridges on the surface of the pileus.

Specimens examined:

Exsiccati: Ule, Myc. Brasil., 40, type distribution of *Hymenochaete crateriformis*.

Venezuela: Maripa, *M. A. Carriker*, comm. by W. G. Farlow, III; Rio Mato, *M. A. Carriker*, comm. by W. G. Farlow, IV.

Brazil: *Spruce* (in Curtis Herb.); Amazonas, Marmellos, *E. Ule*, in Ule, Myc. Brasil., 40.

3. **S. Ravenelii** Berk. & Curtis, Grevillea **1**: 162. 1873; Sacc. Syll. Fung. **6**: 552. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 164. *pl. 7. f. 2.* 1890; Lloyd, Myc. Writ. **4**. Stip. Stereums, 25. *text f. 543.* 1913. Plate 2, fig. 3.

Illustrations: Lloyd, *loc. cit.*; Massee, *loc. cit.*

Type: type distribution in Ravenel, Fungi Car. **4**: 13.

Fructifications gregarious, coriaceous, thin, often growing from a common mycelium; pileus infundibuliform, sometimes split on one side, even, drying cinnamon-buff to bay, often shining and zonate; stem slender, equal, minutely tomentose, drying pale olive-buff to pinkish buff; hymenium even, glabrous, colored like the stem; pileus in section 300–500 μ thick, composed of densely and longitudinally arranged hyaline hyphae 3 μ in diameter; flexuous gloeocystidia 30–60$\times$4$\frac{1}{2}$–7 μ curve into the hymenium but do not protrude above its surface; no cystidia; spores hyaline, even, 3–4$\times$2$\frac{1}{2}$–3 μ.

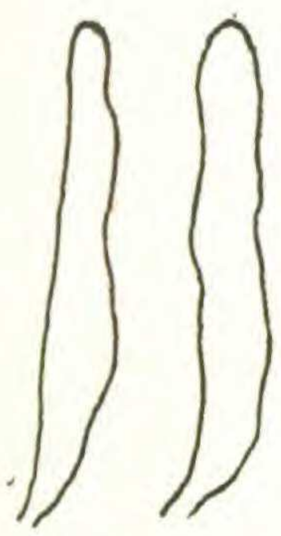


Fig. 1. *S. Ravenelii.* Gloeocystidia × 665. From authentic specimen.

Fructifications 1$\frac{1}{2}$–5 cm. high, 3 mm.–3 cm. in diameter; stem 5–10 mm. long, $\frac{1}{2}$–1$\frac{1}{2}$ mm. thick.

On the ground, rarely on wood humus. South Carolina to Mexico, West Indies, and Brazil. July to April.

S. Ravenelii is near *S. pergamenum* in microscopic characters but is constantly infundibuliform, with slender, more conspicuous stem, and occurs on the ground except very rarely, and is gregarious rather than cespitose. The range of *S. Ravenelii* southward to Brazil is so much greater than has been noted heretofore that it would be well to compare with it authentic specimens of some of the imperfectly described South American species of central-stemmed *Stereums*

Specimens examined:

Exsiccati: Ravenel, Fungi Car. **4**: 13.

South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. **4**: 13, type distribution.

Alabama: *Beaumont, 207* in part (the small specimens on right of the card in Curtis Herb., 4629); Montgomery, *R. P. Burke, 26, 181* (in Mo. Bot. Gard. Herb., 10305, 57059).

Louisiana: Baton Rouge, *C. W. Edgerton, 1544*, and *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 2523, 2522 (in Mo. Bot. Gard. Herb., 42921 and 42939 respectively); St. Martinville, *A. B. Langlois, 1847*.

Mexico: San Luis Potosi, *C. G. Pringle* (in Farlow Herb.).

Cuba: *C. Wright, 255* (under the name *Stereum elegans* in Curtis Herb.); Candelaria, *Earle & Wilson, 205, 207;* Herradura, *N. L. Britton, E. G. Britton, F. S. Earle & C. S. Gager, 6397* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56303).

Trinidad: Carrengo, *Carriker* (in Farlow Herb., 1).

Brazil: Blumenau, *A. Möller*, the *Stereum elegans* of Hedwigia **35**: 288. 1896, comm. by G. Bresadola.

4. S. surinamense Léveillé, Ann. Sci. Nat. Bot. III. **2**: 209. 1844; Sacc. Syll. Fung. **6**: 556. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 161. 1890; Lloyd, Myc. Writ. **4**. Stip. Stereums, 26. *text f. 544*. 1913. Plate 2, fig. 4.

Stereum fulvo-nitens Berkeley, Ann. & Mag. Nat. Hist. II. **9**: 198. 1852; Sacc. Syll. Fung. **6**: 556. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 162. 1890.

Illustrations: Lloyd, *loc. cit.*

Type: in Museum of Paris Herb. presumably.

Pileus coriaceous, infundibuliform, sometimes more elongated on one side, glabrous, shining, lineate or striate, drying tawny to hazel, faintly zonate with numerous very narrow zones; stem central or eccentric, cylindric, drying avellaneous to burnt umber, fibrillose to minutely tomentose, attached at the base by a mycelial pad; hymenium glabrous, even, avellaneous to cinnamon; pileus in section 400 μ thick, composed of a broad layer of densely and longitudinally arranged, thick-walled, hyaline hyphae 3 μ in diameter and of a hymenial layer 45–90 μ thick, the subhymenial portion of which may become thicker than the palisade layer of basidia and gloeocystidia and appears granular and composed of very fine hyphae; gloeocystidia 15–30 μ long, with ventricose base 6–9 μ in diameter, sometimes barely emergent above the basidia; spores hyaline, even, 3–4×2–3 μ.

Fructifications $1\frac{1}{2}$–4 cm. high, 1–$2\frac{1}{2}$ cm. in diameter; stem 3–7 mm. long, about $1\frac{1}{2}$ mm. in diameter.

On dead wood. West Indies, Honduras, and Dutch Guiana. November.

Lloyd's account and figures have made possible the reference to *S. surinamense* of the collections cited below, for the original description by Léveillé is fragmentary and does not even note whether the specimens were growing on the ground or on wood. I have not seen the types of either *S. surinamense* or *S. fulvonitens*. The specimens cited below are characterized by the attachment to the wood by a conspicuous mycelial pad, by rich hazel and shining upper surface of the large, narrowly zonate pileus, by the gloeocystidia, and by the minutely granular subhymenial region in which the hyphae are much finer than in the main hyphal layer and run at right angles to the latter.

Specimens examined:

San Domingo: Consuelo, *N. Taylor, 176* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56293).

Trinidad: *R. Thaxter*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44304).

British Honduras: *M. E. Peck* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56326).

5. **S. macrorrhizum** (Léveillé) Lloyd, Myc. Writ. 4. Stip. Stereums, 28. 1913.

Thelephora macrorrhiza Léveillé, Ann. Sci. Nat. Bot. III. **5**: 146. 1846; Sacc. Syll. Fung. **6**: 524. 1888.

Type: in Museum of Paris Herb., according to Léveillé and Lloyd.

Pileus infundibuliform, coriaceous, somewhat membranaceous, rufescent, striatulate, the margin erect, possibly laciniate; hymenium sulcate, rather pallid; stem rather long, radicated.

On ground, French Guiana. Coll. *Melinon.*

Pileus coriaceous, nearly membranaceous, infundibuliform, russet, with rugosity from base to margin, the latter thin, laciniate; hymenium glabrous, rugose like upper surface of pileus; stem 1–2 decimeters long, glabrous, continued by a long radicated portion which extends perpendicularly into the ground. This character and also the absence of hairy covering of the stem afford a great difference between this species and *Stereum surinamense.*

The above is a translation of the original description. I have not seen authentic specimens; Lloyd notes, *loc. cit.*, that they are, "*Stereum elegans*, of an unusually regular growth. Not so confluent as ordinary."

6. S. Burtianum Peck, N. Y. State Mus. Bul. 75: 21. *pl. O. f. 30–34.* 1904; Sacc. Syll. Fung. **17**: 163. 1905; Lloyd, Myc. Writ. **4**. Stip. Stereums, 21. *text f. 537.* 1913. Plate 2, fig. 5.

Illustrations: Peck, *loc. cit.;* Lloyd, *loc. cit.*

Type: in N. Y. State Mus. Herb. and in Burt Herb.

Fructifications gregarious, coriaceous, thin, infundibuliform, sometimes split to the stem on one side, sometimes dimidiate, the upper surface slightly uneven with radiating fibrils and fibrillose ridges, cartridge-buff when fresh, drying Sayal-brown to hazel, the margin lobed or incised; stem solid, minutely tomentose, Sayal-brown in the herbarium; hymenium even or radiately uneven, glabrous, yellow ocher to pinard-yellow when fresh, becoming pinkish buff to Sayal-brown in the herbarium; pileus in section 600 μ thick, composed of densely and longitudinally arranged hyphae 2 μ in diameter; no cystidia nor gloeocystidia; spores hyaline, even, subglobose, 3–4 μ in diamter, or 4×3 μ.

Fructifications usually 12–20 mm. high, 5–15 mm. in diameter; stem 3–8 mm. long, $\frac{2}{3}$–$1\frac{1}{2}$ mm. thick.

On the ground in frondose woods. New Hampshire to North Carolina and Tennessee, and in Japan. July to October.

Distinguishing characters of this species are the radially arranged fibrils and fibrillose ridges of the upper surface of the pileus, bright yellow hymenium of fresh specimens, small subglobose spores, and absence of zonation, cystidia, and gloeocystidia. These characters separate the species from *S. aurantiacum* and *S. Ravenelii* and from specimens of *S. diaphanum* which have become discolored in the herbarium. The sections crush out and tissues spread apart when slight pressure is applied to the cover glass—a character unusual in stipitate Stereums. The specimen from Tennessee consists of two dimidiate pilei $2\times2\frac{1}{2}$ cm. At Amherst, Massachusetts, Professor Anderson saw perhaps a thousand fructifications of this growing in an area of a square rod; to him I am indebted for the color observations on fresh specimens and for specimens in growing condition showing the colors and also the fact that the consistency of the pileus is not fleshy enough for inclusion of this species in *Craterellus*.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, three collections (two of which are in Mo. Bot. Gard. Herb., 55242 and 55571, and the third in Farlow Herb.).

Vermont: Lake Dunmore, *W. G. Farlow* (in Farlow Herb.).

Massachusetts: Amherst, *P. J. Anderson* (in Mo. Bot. Gard. Herb., 56364, 56365).

New York: Shokan, Ulster Co., *C. H. Peck*, type.

North Carolina: Asheville, *H. C. Beardslee, 2.*

Tennessee: Elkmont, *C. H. Kauffman, 80* (in Mo. Bot. Gard. Herb., 44994).

Japan: Sendai, *A. Yasuda, 21* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56290).

7. S. rivulorum Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 330. 1868; Sacc. Syll. Fung. **6:** 552. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 167. 1890; Lloyd, Myc. Writ. **4.** Stip. Stereums, 21. 1913.

Type: in Kew Herb. and probably in Curtis Herb.

I failed to take any notes of the type specimens of this species

when there was opportunity and have seen no collections which seem referable here. The translation of the original description follows:

Minute, straw-colored; pileus cyathiform, decurrent into a stem dilated above, the margin undulate; hymenium glabrous.

On wet ground amongst moss. Cuba, *C. Wright, 533.*

Pileus $1\frac{1}{2}$ mm. across; stem 4 mm. high, oblique but not really lateral. Habit of a small stipitate *Peziza.* Spores globose, 2–$2\frac{1}{2}$ μ according to Massee.

8. S. quisquiliare (Berk. & Curtis) Lloyd, Myc. Writ. **4.** Stip. Stereums, 36. *text f. 567.* 1913. Plate 2, fig. 6.

Thelephora quisquiliaris Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 329. 1868; Sacc. Syll. Fung. **6:** 524. 1888.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and Curtis Herb.

Pileus very small, flabellate or rarely cyathiform, tomentose, shining white; stem lateral, short, thickened above; pileus in section composed of loosely arranged hyphae 3–4 μ in diameter; cystidia hair-like, not incrusted, 6 μ in diameter, protruding up to 40 μ beyond the basidia; spores hyaline, even, 4×3–4 μ.

Pileus 3–5 mm. broad, and 5–7 mm. long including the stem-like base.

On particles of bark among moss and on mosses. Cuba.

The fructifications of *S. quisquiliare* are small and of soft bibulous texture and resemble in aspect those of *S. cyphelloides* and *Cyphella muscigena,* but are distinguished from both these species by the hair-like cystidia, of which I noted the presence upon examination of the type but which no longer show well in the permanent microscopical preparation. I had hoped that recent collections would confirm the note as to hair-like cystidia and enable me to be more confident that *Thelephora quisquiliaris* should not be transferred to *Cyphella.*

Specimens examined:

Cuba: *C. Wright, 519,* type (in Curtis Herb.).

9. S. aurantiacum (Pers.) Lloyd, Myc. Writ. **4.** Stip. Stereums, 22. *text f. 538.* 1913. Plate 6, fig. 7.

Thelephora aurantiaca Persoon in Gaudichaud, Voy. Urania Bot. 176. 1827; Fries, Epicr. 536. 1838; R. Soc. Sci. Up-

sal. Actis III. 1: 108. 1851; Montagne in d'Orbigny, Voy. Am. Merid. Bot. 2: 48. 1839; in Ramon de la Sagra, Fl. Cub. 4: 228. *pl. 14. f. 1.* 1853; Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 526. 1888.—*T. sericella* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 522. 1888.—*T. affinis* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 329. 1868 (not *T. affinis* Pers.); Sacc. Syll. Fung. 6: 530. 1888.—*Podoscypha aurantiaca* (Pers.) Patouillard in Duss, Fl. Crypt. Antilles Fr. 230. 1904.—An *T. spectabilis* Léveillé, Ann. Sci. Nat. Bot. III. 2: 206. 1844?—An *Stereum xanthellum* Cooke, Grevillea 9: 12. 1880?

Illustrations: Lloyd, *loc. cit.;* Montagne, *loc. cit.*

Fructifications coriaceous, soft, everywhere drying Naples-yellow, losing the bright color in the herbarium; upper surface sericeous, lineate-striate, the margin variable, often somewhat fimbriate; stem thin, with yellowish tomentum at the base and sometimes with tomentose mycelial strands; hymenium even, or nearly so, setulose with hyaline hairs under a lens; cystidia hair-like, not incrusted, cylindric, obtuse, 6–8 μ in diameter, protruding up to 40 μ; spores hyaline, even, 5–8×3–4 μ.

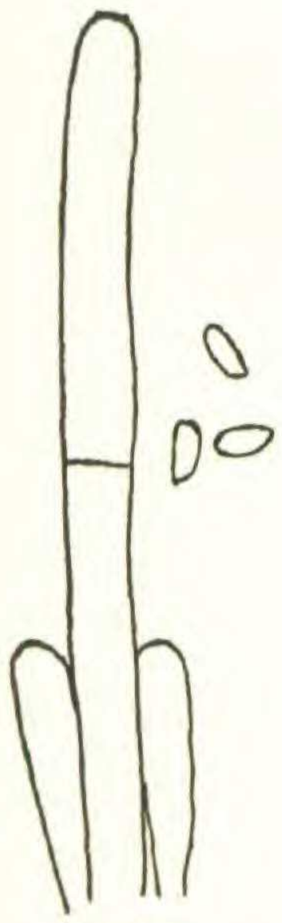


Fig. 2. *S. aurantiacum.* Cystidium, basidia, and spores, × 665.

Fructifications 2–3 cm. high; pileus 1–2 cm. in diameter when infundibuliform and 5 mm.–4 cm. when flabelliform; stem 1 cm. long, about 1 mm. thick.

On ground and dead wood. West Indies to Paraguay. June to February. Apparently frequent.

S. aurantiacum is unique among the stipitate Stereums by its bright yellow color. Lloyd states that old specimens may lose their bright yellow color and become brown, and the figures by Montagne indicate this also. I have seen only one gathering in which some of the specimens have discolored brownish; this gathering from Porto Rico, by Prof. Stevenson, bears the field note: "nearly pure white when collected; became yellow in drying; no yellow showed until partly dried." The extensive synonymy of this species is due to its occurrence sometimes on the ground, sometimes on wood, sometimes being wholly infundi-

buliform and sometimes wholly flabelliform, but occasionally a gathering shows both infundibuliform and flabelliform specimens. The soft texture of the pilei—like filter-paper or like wash leather—the large, cylindric, non-incrusted cystidia, and large elongated spores are a good combination of characters for the recognition of *S. aurantiacum* independently of the yellow color. Lloyd gives *Thelephora spectabilis* and *Stereum xanthellum* as synonyms of *S. aurantiacum*, and this seems quite probable according to the original descriptions of these species, but he does not state that he has studied the authentic specimens; I have not been able to examine them.

Unless there is more than one edition of Gaudichaud's 'Voy. Urania Bot.,' there is an error, as noted by Lloyd, in the citation by Fries in 'Epicrisis,' followed by later authors, of a figure of *T. aurantiaca* by Persoon. Dr. Farlow kindly searched for me for such a figure in his copy but without success.

Specimens examined:

Jamaica: Port Antonio, *F. S. Earle, 600*, comm. by N. Y. Bot. Gard. Herb.; *A. E. Wight*, comm. by W. G. Farlow; Troy and Tyre, *W. A. Murrill & W. Harris, 1112*, comm. by N. Y. Bot. Gard. Herb.

Cuba: *C. Wright, 237*, type of *Thelephora sericella* (in Curtis Herb.); *C. Wright, 198, 263*, type of *Thelephora affinis* B. & C. (in Curtis Herb.); Banao Mts., *Leon & Clement, 5570* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56262); Ceballos, *C. J. Humphrey, 2683* (in Mo. Bot. Gard. Herb., 8267); Guantanamo, *Hioram* (in J. R. Weir Herb., 10583, and Mo. Bot. Gard. Herb., 56217); Omaja, *C. J. Humphrey, 3025* (in Mo. Bot. Gard. Herb., 8632); Nipe Bay, *F. S. Earle, No. A.*

Porto Rico: Rio Piedras, *J. R. Johnston*, comm. by J. A. Stevenson, 1987 (in Mo. Bot. Gard. Herb., 10660); *J. A. Stevenson, 3354, 5585* (in Mo. Bot. Gard. Herb., 17720 and 6908).

San Domingo: Consuelo, *N. Taylor, 178* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56304).

10. S. diaphanum (Schw.) Cooke in Sacc. Syll. Fung. **6:** 558. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 162. 1890; Lloyd, Myc. Writ. **4.** Stip. Stereums, 19. *text f. 534.* 1913.

Plate 2, figs. 8 and 9.

Thelephora diaphana Schweinitz in Berk. & Curtis, Acad. Nat. Sci. Phila. Jour. **2**: 278. 1853.—*T. Willeyi* Clinton in Peck, N. Y. State Mus. Rept. **26**: 71. 1874; Sacc. Syll. Fung. **6**: 524. 1888.—An *T. Sullivantii* Montagne, Syll. Crypt. 176. 1856?

Type : in Herb. Schweinitz, in Curtis Herb., and in Kew Herb.

Fructifications coriaceous, thin, deeply infundibuliform, sometimes deeply split, white, drying diaphanous, sericeous, fibrillose, striate, sometimes with slightly elevated ridges, sometimes obscurely zoned, the margin thin, entire or laciniately toothed; stem slender, cylindric, more or less clothed with white matted down which is usually present at the base and binds the earth together in a ball; pileus of type in section 200 μ thick, composed of longitudinally arranged, thin-walled hyaline hyphae 3 μ in diameter, densely crowded together; hymenium white, setulose with hyaline hairs under a lens; cystidia hair-like, not incrusted, cylindric, obtuse, 6–9 μ in diameter, protruding 20–60 μ; spores hyaline, even, 4–5$\times$2$\frac{1}{2}$–3 μ.

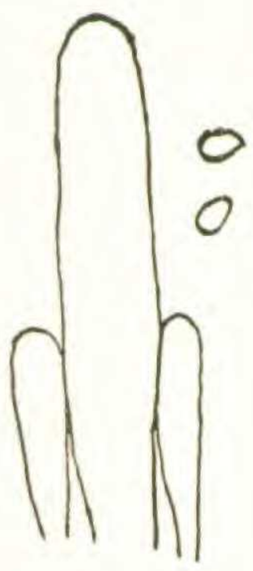


Fig. 3. *S. diaphanum*. Cystidium, basidia, and spores, × 665.

Fructifications 2–4 cm. high, 8 mm.–2 cm. in diameter; stem 1–3 mm. in diameter.

On the ground in moist woods of frondose species. New York to Missouri, and in Alabama, Washington, and California.

S. diaphanum, as collected by Schweinitz and shown in pl. 2, fig. 8, differs from *S. aurantiacum* in absence of bright yellow color, in shorter spores, and in stem and ground at base of stem being merely white-downy. In western New York, this species attains a more luxuriant growth than the small specimens collected by Schweinitz, has a larger and rather thicker pileus and thicker stem as shown in pl. 2, fig. 9; such larger specimens were published as *Thelephora Willeyi*, but the intergradations with *S. diaphanum* are so numerous and close that it should be kept with the latter in my opinion.

Specimens examined:

New York: Buffalo, *Clinton*, type of *Thelephora Willeyi* (in N. Y. State Mus. Herb.); Chappaqua, *Mrs. C. E. Ryder & Mrs. W. A. Murrill* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56289); Freeville, *V. B. Walker, 15*

(in Mo. Bot. Gard. Herb., 8407); Geddes, *G. E. Morris, G;* Ithaca, *C. Thom* (in Cornell Univ. Herb., 9992); Jamesville, *H. D. House* (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 55498), and *L. M. Underwood;* Lowville, *C. H. Peck* (in N. Y. State Mus. Herb.); Orville, *G. E. Morris, G.*

Ohio: Gnaddenhutte, *Schweinitz,* type (in Herb. Schweinitz and in Curtis Herb.).

Missouri: Valley Park, *E. A. Burt & L. O. Overholts* (in Mo. Bot. Gard. Herb., 44059).

Alabama: Montgomery, *R. P. Burke, 25* (in Mo. Bot. Gard. Herb., 13146.).

Washington: Seattle, *W. A. Murrill, 128, 143, 144* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55745, 55729, 55726).

California: Tamalpais, *H. W. Harkness* (under the herbarium name *Thelephora Harknessii* Peck in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55925).

11. S. exiguum (Peck) Burt, n. comb. Plate 2, fig. 10.

Thelephora exigua Peck, N. Y. State Mus. Bul. 54: 953. 1902; Sacc. Syll. Fung. **17**: 161. 1905.

Type: in N. Y. State Mus. Herb. and in Burt Herb.

Pileus coriaceous-membranaceous, very thin, diaphanous, infundibuliform, radiately fibrous-striate, becoming bister in the herbarium, originally "pale alutaceous" according to Peck, the margin lacerate; stem slender, solid, pruinose, and bearing a few whitish hairs which are present also on the ground about the base; pileus in section 100 μ thick, composed of longitudinally arranged, hyaline hyphae $2\frac{1}{2}$–3 μ in diameter, closely crowded together; cystidia hair-like, not incrusted, cylindric, obtuse, 7 μ in diameter, protruding 25 μ beyond the basidia; spores hyaline, even, $4\frac{1}{2}\times 2$ μ, borne 4 to a basidium.

Fructifications 1–3 mm. in diameter, 3–5 mm. high; stem 2 mm. long, $\frac{1}{4}$–$\frac{1}{3}$ mm. in diameter; pileus $\frac{1}{10}$ mm. thick.

On the ground, Westport, New York. October.

S. exiguum is miniature *S. diaphanum* of slightly darker color. It is known from the original collection only. The smallest specimens of *S. diaphanum* are many times larger than

the largest specimen of *S. exiguum*. While differences in size are not generally a good criterion for specific distinction, I am inclined to think that they will prove so in this instance.

Specimens examined:

New York: Westport, *C. H. Peck*, type (in N. Y. State Mus. Herb. and in Burt Herb.).

12. S. tenerrimum Berk. & Ravenel, Grevillea **1**: 162. 1873; Sacc. Syll. Fung. **6**: 551. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 165. 1890. Plate 2, fig. 11.

Type: in Kew Herb. and Curtis Herb.

Pileus coriaceous, thin, infundibuliform or flabelliform, soon lobed and split, upper surface slightly rough, fibrillose-striate, not zonate or only very indistinctly "pale tan" when collected, becoming tawny olive to Saccardo's umber in the herbarium; stem filiform, whitish, bearing some fibrils towards the base; hymenium even, concolorous, setulose with hyaline hairs under a lens; pileus in section 300 μ thick, composed of longitudinally and densely arranged hyaline hyphae 3 μ in diameter; cystidia hair-like, not incrusted, 4–8 μ in diameter, protruding 30–50 μ; spores hyaline, even, subglobose, 4–5$\times$3–4 μ.

Fructifications 2–10 mm. broad, 5mm.–$2\frac{1}{2}$ cm. high; stem 3–7 mm. long, $\frac{1}{4}$–$\frac{1}{2}$ mm. thick.

On ground among mosses. New York, Wisconsin, South Carolina, and Cuba. July to November. Rare.

The collections which I have referred to *S. tenerrimum* are from the widely separated localities stated above and only a single gathering of several fructifications at each locality. There are slight differences between the specimens of the several gatherings, but not great enough to preclude their reference to a single species, although doing so has required some generalization from the original description.

S. tenerrimum is related to *S. undulatum* of northern Europe as known to me by the specimens distributed in Karsten, Fungi Fennicae, 912, and by the extended account by Maire, Ann. Myc. **7**: 426–431, *text f. 1, 2.* 1909, but the latter species attains much larger size, has a coarser stem, and is infundibuliform with central stem. None of the collections of *S. tenerrimum* are composed wholly of specimens with infundibuliform

pilei and the stem central; the original collections have some specimens with pileus longer on one side than the other and stem eccentric; in more recent gatherings some specimens are even flabelliform. *S. tenerrimum* appears to be a distinct species.

Specimens examined:

New York: Croghan, *C. H. Peck* (in N. Y. State Mus. Herb.).
South Carolina: Society Hill, *H. W. Ravenel,* type (in Curtis Herb., 5029, and in Kew Herb.).
Wisconsin: Afton, *R. A. Harper.*
Cuba: Havana Province, *Huo Leon, 1456* (in N. Y. Bot. Gard. Herb. and in Mo. Bot. Gard. Herb., 56307).

13. S. pergamenum Berk. & Curtis, Grevillea **1**: 161. 1873; Sacc. Syll. Fung. **6**: 552. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 161. 1890; Lloyd, Myc. Writ. **4**. Stip. Stereums, 27. *text f. 545.* 1913. Plate 2, fig. 12.

An *Stereum nitidulum* Berkeley, Hooker's London Jour. Bot. **2**: 638. 1843?

Type: type distribution in Ravenel, Fungi Car. **3**: 25.

Fructifications somewhat cespitose and grown together, stipitate; pileus coriaceous, infundibuliform, sometimes split and petaloid, minutely lineate, drying hazel, obscurely zoned, the margin thin, often toothed or laciniate; stem cylindric, drying pinkish buff, very minutely tomentose; hymenium drying pinkish buff, glabrous; pileus in section 500 μ thick, composed of densely and longitudinally arranged hyaline hyphae 3 μ in diameter; flexuous, clavate, curved gloeocystidia, 50×6 μ, extend into the hymenium but do not rise to its surface; cystidia none; spores hyaline, even, slightly flattened on one side, 4–4½ ×3–3½ μ.

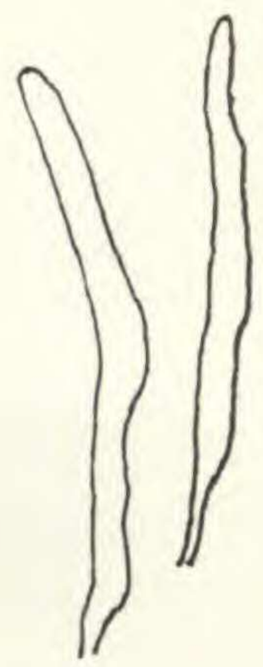


Fig. 4. *S. pergamenum.* Gloeocystidia × 665.

Fructifications 1½–4 cm. high, 8 mm.–3 cm. in diameter; stem 2–10 mm. long, 1–3 mm. in diameter.

On stumps or buried wood, perhaps rarely on the ground. Ohio and North Carolina to Mexico and in the West Indies. September to January.

S. pergamenum may be recognized by its occurrence in small clusters on wood at or near the surface of the ground, by small and nearly globose spores, and by the presence of gloeocystidia. It is probably more frequent in the West Indies than in the United States. When studying the specimens of this species in Kew Herbarium I compared with them the type of *Stereum nitidulum* Berk., collected by Gardner in Goyaz, Brazil, and concluded that it is probably the same species as *S. pergamenum*. In that early stage of my work I did not record the presence of gloeocystidia in the types of either *S. pergamenum* or *S. nitidulum*, and since I have no permanent preparation from the type of the latter, further, more critical study may show that it is a distinct species. The collection from Cuba, referred by Berkeley to *S. nitidulum*, has gloeocystidia and is referable to *S. pergamenum*.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. 3: 25.

Ohio: Preston, *T. G. Gentry* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56301).

North Carolina: Blowing Rock, *G. F. Atkinson*, from Bot. Dept. of Cornell Univ., 4182.

Alabama: *J. M. Peters*, in Ravenel, Fungi Car. 3: 25, type distribution; *J. M. Peters, 601* and *another specimen* (in Curtis Herb., the latter, Curtis Herb., 3814); *Beaumont, 207* in part, the large zonate specimen mounted on left side of card with specimens of *S. Ravenelii* (in Curtis Herb., 4629 in part); Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56306).

Louisiana: Ville Platte, *A. B. Langlois, 2897.*

Mexico: Motzorongo, near Cordoba, *W. A. & Edna L. Murrill, 994* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 54596).

Cuba: *C. Wright, 836* (in Curtis Herb., under the name *S. nitidulum* Berk.); Herradura, *F. S. Earle, 545*, and *N. L. Britton, E. G. Britton, F. S. Earle & C. S. Gager, 6326* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56305 and 56263 respectively); Sumidero, *J. A. Shafer, 13905* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56264).

San Domingo: Bonao, *J. A. Stevenson, 7010* (in Mo. Bot. Gard. Herb., 55656).

14. S. cristatum Berk & Curtis, Grevillea **1**: 163. 1873; Sacc. Syll. Fung. **6**: 556. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 167. 1890; Lloyd, Myc. Writ. **4**. Stip. Stereums, 38. 1913.

Type: in Kew Herb., not found by me in Curtis Herb. although sought for.

Pileus coriaceous, flabelliform or obliquely cyathiform, pallid to light bay-brown, somewhat zoned, glabrous and shining towards the margin, bearing a cluster of coarse hairs towards the base; stem, when present, cylindric, scarcely 2 mm. long; hymenium even, paler than the upper surface; in structure 200–250 μ thick, composed of longitudinally arranged and somewhat interwoven hyaline hyphae 3 μ in diameter; no cystidia; gloeocystidia pyriform, 9–12$\times$7$\frac{1}{2}$ μ; spores, as found in a crushed preparation, hyaline, even, 4$\times$2$\frac{1}{2}$ μ, few found—noted by Massee as subglobose, 5–6 μ in diameter.



Fig. 5. *S. cristatum.* Gloeocystidia $\times$ 665. From type.

Pileus 6–10 mm. across.

On dead *Vitis* in swamps. South Carolina.

Reexamination of my preparation of the type of *S. cristatum* fails to demonstrate that the pyriform organs in its hymenium are longitudinally septate; furthermore some of these organs are more elongated than stated above and irregular in form. For these reasons I regard the bodies as pyriform gloeocystidia rather than possibly miniature basidia of the longitudinally septate type, the demonstrated presence of which would require transfer of this species to *Eichleriella*. The occurrence of *S. cristatum* on dead grape vines, the crest of coarse hairs towards the base of the pileus, the small size of the latter, and the pyriform organs in the hymenium are a good group of characters for identification of this species, although known so far only from the original collections.

Specimens examined:

South Carolina: Santee Swamp, *H. W. Ravenel,* Curtis Herb.

No. 2038, type and an *unnumbered specimen* (both in Kew Herb.).

15. S. pallidum (Pers.) Lloyd, Myc. Writ. **4.** Stip. Stereums, 31. *text f. 536, 550.* 1913. Plate 3, fig. 13, 14.

Craterella pallida Persoon, Ic. et Descr. Fung. **1**: 3. *pl. 1. f. 3.* 1798.—*Thelephora pallida* Persoon, Syn. Fung. 565. 1801; Myc. Eur. **1**: 111. 1822; Fries, Hym. Eur. 633. 1874; Sacc. Syll. Fung. **6**: 527. 1888.—*Helvella pannosa* Sowerby, Col. Figs. Eng. Fungi, *pl. 155.* 1788, in part.—*Thelephora pannosa* Sowerby ex Fries, in part, and *T. pannosa* var. *pallida* (Pers.) Fries, Syst. Myc. **1**: 430. 1821.—*T. Sowerbeyi* Berkeley, Outlines Brit. Fungi, 266. 1860; Ann. & Mag. Nat. Hist. III. **15**: 320. 1865; Fries, Hym. Eur. 633. 1874; Sacc. Syll. Fung. **6**: 522. 1888.—*Stereum Sowerbeyi* (Berk.) Massee, Linn. Soc. Bot. Jour. **27**: 164. 1890.—*Bresadolina pallida* (Pers.) Brinkmann, Ann. Myc. **7**: 289. 1909.

Illustrations: Persoon, Ic. et Descr. Fung. **1**: *pl. 1. f. 3*; Sowerby, Col. Figs. Eng. Fungi, *pl. 155*; Lloyd, Myc. Writ. **4.** Stip. Stereums, *text f. 536, 550.*

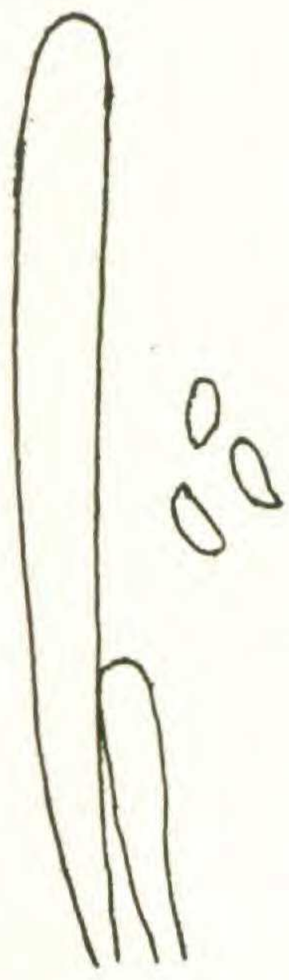


Fig. 6. *S. pallidum.* Cystidium, basidium, and spores, × 665. From Bresadola.

Fructifications cespitose, laterally confluent, infundibuliform, coriaceous-spongy, rather thick, becoming cartridge-buff to cream-color in the herbarium, the upper side strigose-squamose; stem short, villose at the base; hymenium with slight, very obtuse, radial folds, under a lens more or less setulose with hyaline hairs; cystidia hair-like, not incrusted, cylindric, 6–8 μ in diameter, protruding 10–50 μ beyond the basidia, usually very numerous but sometimes only few found; spores hyaline, even, flattened on one side, 6–8×4–5 μ.

Fructifications 1–3 cm. in diameter, 2–3 cm. high.

On the ground in woods. Vermont to North Carolina. July to November. Rare.

American specimens of *S. pallidum* agree well with the European specimen received from Bresadola, and, like the latter, are paler than the otherwise excellent figures of *Thelephora*

pallida in Persoon's 'Icones et Descriptiones Fungorum' already cited. Our specimens and that from Bresadola have the hymenium distinctly setulose with hair-like cystidia. Some of the specimens in Kew Herbarium under the name of *Thelephora Sowerbeyi* have hair-like cystidia, but these organs are few or absent in whole sections from other specimens. The original specimen of *Helvella pannosa* from Sowerby in Berkeley Herbarium at Kew has hair-like cystidia. I concluded that these cystidia are variable in abundance in English specimens and that *Thelephora Sowerbeyi* and *Helvella pannosa* as represented by the specimen from Sowerby should be kept with *Thelephora pallida*. Although the specific name *pannosa* of Sowerby was at first adopted by Fries, this was dropped later when Berkeley found this species, as understood by Sowerby, to be based upon a mixture of two species which were separated as *Thelephora Sowerbeyi* and *T. multizonata; T. pallida* has priority over *T. Sowerbeyi*.

S. pallidum may be distinguished from *T. Willeyi* forms of *S. diaphanum* by its occurrence in small concrescent clusters, by short villose or tomentose stem, and by thicker pileus with upper surface split radially into stiff straight fibrils.

Specimens examined:

Austria: *G. Bresadola.*

England: from Sowerby, under the name *Helvella pannosa* (in Kew Herb.); Cornwall, *C. Rea, 1* (in Mo. Bot. Gard. Herb., 56241); Hereford, *Mrs. Wynne* (in Kew Herb., under the name *Thelephora Sowerbeyi*).

Vermont: Brattleboro, *C. C. Frost* (in Univ. Vermont Herb.); Grand View Mountain, *E. A. Burt.*

Connecticut: Waterbury, *C. C. Hanmer, 1191.*

North Carolina: Blowing Rock, *G. F. Atkinson,* comm. by Cornell Univ. Herb., 4192.

16. S. elegans (Meyer) Lloyd, Myc. Writ. 4. Stip. Stereums, 24. *text f. 539.* 1913. (Not *S. elegans* of earlier authors.)
Plate 3, fig. 15.

Thelephora elegans Meyer, Fl. Essequeboensis, 305. 1818; Fries, Syst. Myc. 1: 430. 1821; Epicr. 545. 1838. (But here abridged in an important respect so that following authors modified the description to apply to more common species).

An *T. macrorrhiza* Léveillé, Ann. Sci. Nat. Bot. III. 5: 146. 1818? See Lloyd, *loc. cit.*, p. 28.

Illustrations: Lloyd, *loc. cit.* Not by the figures under this name in other works, as Engl. & Prantl, Nat. Pflanzenfam., for example.

Fructifications cespitose, coriaceous, confluent, infundibuliform and deeply split on one side, or little developed on one side and prolonged and petaloid on the other; upper surface of pilei glabrous, radially plicate, drying diamine-brown, the margin paler and more or less lobed; stems solid, buffy brown, short, tomentose, branched above; hymenium radially plicate, nearly white, pruinose, often cracked; pileus in section 400 μ thick, composed of densely and longitudinally arranged, hyaline hyphae 3 μ in diameter; no cystidia; gloeocystidia $4\frac{1}{2}$ μ in diameter, barely distinguishable from the basidia; spores hyaline, even, subglobose, $3\frac{1}{2}$–$4\frac{1}{2}$ μ in diameter.

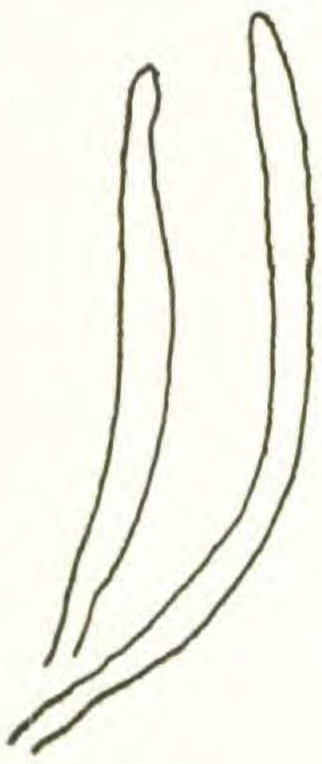


Fig. 7. *S. elegans.* Gloeocystidia × 665.

Fructifications 4–5 cm. high; pilei 1–2 cm. in diameter; stems about 1 cm. long, 1–2 mm. in diameter.

In a dense cluster of about 16 fructifications springing from an area of 2 square centimeters on the ground. Porto Rico to British Guiana. Summer.

I have not seen the type of *Stereum elegans* from Dutch Guiana nor reference to its existence; a collection from Porto Rico on which the preceding description is based has fructifications growing on the ground closely together and concrescent where in contact; the pilei are plicate on both surfaces and contrast so greatly in color that it seems as though fuscous in connection with the upper side and whitish flesh-color and pruinose for the under side might have been used for the color difference. The specimens of this collection are not zonate; infundibuliform without any qualification of this character does not seem accurate; hence it may be that this Porto Rican collection is merely near, rather than the true, *Stereum elegans*. However, solitary fructifications growing on wood, as figured in Engl. & Prantl, Pflanzenfam., are certainly a very different species from *S. elegans*, the original description of which is as follows:

"1. Thelephora elegans. nob.

"T. subcaespitosa infundibuliformis carnoso-coriacea plicata utrinque glabra, superne dilute fusco-fasciata, inferne albescenti-carnea pruinosa.

"Ad terram argillosam.

"Viget Junio.

"*Adumbr.* Pulchra species. Gregarie crescens, subcarnosa, tenuis, glabra. Pileus substipitatus, 1–2 uncialis, infundibuliformis, subcompressus, undulato-plicatus, margine irregulariter crenatus, interne rufescens, et fasciis dilute fuscis eleganter variegatus, nitens, externe albescenti-carneus, opacus, pruinosus."

Specimens examined:

Porto Rico: Mayaguez, *B. Lopez Santiago, 17* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56265).

17. S. decolorans (Berk. & Curtis) Lloyd, Myc. Writ. **4.** Stip. Stereums, 36. 1913. Plate 3, fig. 234.

Thelephora decolorans Berkeley & Curtis, Linn. Soc. Bot. Jour. **10:** 328. 1868; Sacc. Syll. Fung. **6:** 530. 1888.—*Podoscypha decolorans* (Berk. & Curtis) Patouillard in Duss, Fl. Crypt. Antilles Fr. 231. 1904.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, gregarious or somewhat cespitose, stipitate; pileus split on one side quite, or nearly, to the stem, usually wedge-shaped to broadly flabelliform, sometimes radially lineate, drying cinnamon; stem cylindric, colored like the pileus, tomentose, attached by a mycelium common to several fructifications; hymenium colored like the pileus and stem, sometimes lineate; pileus in section 200–400 μ thick, composed of densely and longitudinally arranged hyaline hyphae 3–3$\frac{1}{2}$ μ in diameter; no cystidia; gloeocystidia flexuous, 45–90×3–6 μ, between the basidia or curving into the hymenium; spores hyaline, even, subglobose, 4–4$\frac{1}{2}$×3–4 μ.

Fructifications 1–3 cm. long, 5–13 mm. broad; stem 2–10 mm. long, $\frac{1}{2}$–1 mm. thick.

On dead wood. Jamaica to Trinidad. May to January.

S. decolorans is stated in the original description to have been white, drying ochraceous; I have seen only dried specimens which are pale cinnamon throughout. The occurrence of the

fan-shaped fructifications in clusters on dead wood, pale cinnamon color when dry, presence of gloeocystidia, and small subglobose spores constitute a group of characters by which dried specimens of *S. decolorans* may be distinguished from other species in our region.

Specimens examined:

Jamaica: *W. A. Murrill, 1181* (in N. Y. Bot. Gard. Herb.).

Cuba: *C. Wright 234, 248*, type (in Kew Herb. and Curtis Herb.); Santiago de las Vegas, *Van Herman*, comm. by F. S. Earle, 257.

Trinidad: Carengo, *M. A. Carriker*, comm. by W. G. Farlow, 1.

18. S. radicans (Berk.) Burt, n. comb. Plate 3, fig. 16.

Thelephora radicans Berkeley, Hooker's London Jour. Bot. **3**: 190. 1844; Berkeley & Curtis, Linn. Soc. Bot. Jour. **10**: 329. 1868; Sacc. Syll. Fung. **6**: 525. 1888.—*Podoscypha radicans* (Berk. & Curtis) Patouillard in Duss, Fl. Crypt. Antilles Fr. 230. 1904.

Type: in Kew Herb. probably.

"Plant $1\frac{1}{2}$ inch high, $\frac{3}{4}$ of an inch broad, spathulate or subinfundibuliform, split on one side and slightly lobed, minutely striate, with raised lines, tawny, coriaceous. Stem $\frac{3}{4}$ of an inch high, $1\frac{1}{2}$ line thick, incrassated at the base, and sending off strong branched roots. Hymenium nearly even, fuliginous; spores apparently fuliginous."

The above is the original description of the type specimens, collected in Surinam, Guiana, by Hostmann, 489. My knowledge of the species is based upon a later collection made in Cuba by C. Wright and determined by Berkeley. This specimen and the others cited below show well the longitudinal raised lines on the upper surface of the pileus, which is thicker than in related species, being 1–$1\frac{1}{4}$ mm. thick, and the hymenium 100–200 μ thick; some specimens have dried with the upper surface pinkish buff and others from wood-brown to Verona-brown; hymenium even, wood-brown to fuscous; stem 10–15 mm. long, 3–4 mm. in diameter, sometimes radicated to reach buried wood; no cystidia nor gloeocystidia; spores hyaline, even, becoming minutely rough-walled and sometimes slightly angular, 6×5 μ.

Specimens examined:

Cuba: *C. Wright, 209*, authentic (in Curtis Herb.).

Jamaica: Castleton Gardens, *W. A. & Edna L. Murrill, 66,* comm. by N. Y. Bot. Gard. Herb.
Trinidad: *R. Thaxter* (in Farlow Herb.).
Grenada: *W. E. Broadway*, September collection (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56316); St. George's, *W. E. Broadway* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56317).
British Honduras: *M. E. Peck* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56321).

19. S. pusiolum Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 330. 1868; Sacc. Syll. Fung. **6**: 558. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 168. 1890; Lloyd, Myc. Writ. **4**: Stip. Stereums, 39. 1913. Plate 3, fig. 17.

Type: in Kew Herb. and Curtis Herb.

Fructifications gregarious, stipitate, coriaceous, curling in drying; pileus flabelliform or wedge-shaped, tapering to the stem, more or less split when large, minutely tomentose or hoary, white at first, drying smoke-gray, the margin thick and entire; stem short, solid, a little larger towards the base, colored like the pileus; hymenium even, mouse-gray, thick, contracting and sometimes cracking in drying; pileus in section 400–800 μ thick, composed of closely and longitudinally arranged hyaline hyphae $2\frac{1}{2}$ μ in diameter; no cystidia, gloeocystidia, nor conducting hyphae; spores hyaline, even, apiculate at base, $4–5\frac{1}{2} \times 3–5$ μ.

Fructifications 1–2 cm. high, 1–15 mm. broad; stem 5–8 mm. long, $\frac{1}{2}–1\frac{1}{2}$ mm. thick.

On clay ground. West Indies. November to March.

The white pileus, drying gray of nearly the shade of *Polyporus adustus*, minutely hairy, wedge-shaped, and without zonation, the much darker hymenium—dark as in *P. adustus*—the rather large spores, and the absence of gloeocystidia afford a group of characters highly distinctive for *Stereum pusiolum*, the description of which I have changed materially from that published by the authors of the species. They disregarded Wright's note that the specimens were white and were collected on banks by roadside and published instead "rufobrunneum" and "on rootlets." The recent collections, cited below, which I have compared with the type, show also that the dimensions of the fructifications are usually much larger than those of the type collection.

Specimens examined:

Cuba: *C. Wright, 510*, type (in Curtis Herb.); El Yunque, Baracoa, *L. M. Underwood & F. S. Earle, 1087, 1141*, comm. by N. Y. Bot. Gard. Herb., 1141 (in Mo. Bot. Gard. Herb., 56588).

Porto Rico: Rio Piedras, *J. R. Johnston, 89* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56284).

20. S. glabrescens Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 330. 1868; Sacc. Syll. Fung. **6:** 558. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 169. 1890; Lloyd, Myc. Writ. **4.** Stip. Stereums, 37. *text f. 558.* 1913. Plate 3, fig. 18.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and Curtis Herb.

Fructifications scattered, sometimes two from a common mycelial pad, stipitate; pileus flabelliform, zonate, minutely velvety, sometimes nearly glabrous, drying Verona-brown to chestnut, the margin paler, tapering behind into a short stem; stem lateral, nearly equal, velvety; hymenium even, concave, drying pinkish buff; no cystidia nor gloeocystidia; spores hyaline, even, 4–5×3–4 μ.

Pileus 5–20 mm. long, 5–20 mm. broad; stem 2–10 mm. long, $\frac{1}{2}$–$1\frac{1}{2}$ mm. thick.

On fallen twigs and mossy rotten wood. West Indies. May to September.

S. glabrescens has small, rather scattered fructifications, with firm, coriaceous, minutely velvety pileus and stem, small subglobose spores, and no cystidia, and it occurs on wood. Some collections are nearly glabrous. A mycelial pad is usually present at base of stem.

Specimens examined:

Cuba: *C. Wright, 520*, type (in Curtis Herb.); Pinar del Rio, *J. A. Shafer, 13906* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56298).

Porto Rico: Ponce, *F. S. Earle, 163*, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Hollymount, *L. M. Underwood, 3427* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56299).

Dominica: Landat, *F. E. Lloyd, 380*, comm. by N. Y. Bot. Gard. Herb.

21. S. flabellatum Patouillard, Soc. Myc. Fr. Bul. **16:** 179. 1900; Sacc. Syll. Fung. **16:** 187. 1902; Lloyd, Myc. Writ. **4.** Stip. Stereums, 39. 1913.

Podoscypha flabellata Patouillard in Duss, Fl. Crypt. Antilles Fr. 231. 1904.

Pileus membranaceous, thin, expanded anteriorly, regularly attenuated posteriorly into a lateral stipe which is compressed; margin papyraceous, deeply incised or lobed; dorsal surface marked by slight puberulence of projecting hairs or crests which are slightly diverging or fan-shaped, not zonate; hymenium inferior, glabrous, even; stem becoming pubescent, short, enlarged at the base into a disk for attachment.

Fructification 4–6 cm. high; stem ½–1 cm. long, 1–2 mm. thick. Fructification erect, spathulate, often confluent by the margin with neighbors, whitish when living, livid and pellucid upon drying.

On rotting wood on the ground. Guadaloupe.

The above is a translation of Patouillard's description. Lloyd saw a specimen in the museum at Berlin and states that the dried specimens are dark reddish bay.

22. S. fissum Berkeley, Hooker's Jour. Bot. **8:** 273. 1856; Massee, Linn. Soc. Bot. Jour. **27:** 169. 1890; Sacc. Syll. Fung. **11:** 120. 1895; Lloyd, Myc. Writ. **4.** Stip. Stereums, 37. *text f. 559.* 1913. Plate 3, fig. 19.

S. Huberianum P. Hennings, Hedwigia **41:** (15). 1902; **43:** 173. 1904.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and in Curtis Herb.

Pilei gregarious, occurring singly, sessile or short-stipitate, coriaceous, flabelliform or wedge-shaped, often divided into wedge-shaped segments, glabrous, even, not shining nor zonate, white when fresh, now reddish brown in the herbarium, attached by a flat mycelial pad; hymenium even; in structure 300–400 μ thick, composed of densely and longitudinally arranged hyaline hyphae 3 μ, or some 4 μ, in diameter; no cystidia nor gloeocystidia; the few detached spores found are hyaline, even, 6×4 μ.

Pileus 8–15 mm. long, 3–15 mm. broad.

On dead twigs, Brazil.

S. fissum may yet be found as far north as the West Indies and Central America. The species is noteworthy by its occurrence on dead twigs in scattered, solitary, azonate fructifications which are often deeply split into segments, and by absence of cystidia and gloeocystidia.

Specimens examined:

Exsiccati: Ule, Myc. Brasil., 42, under the name *Stereum Huberianum.*

Brazil: Panure, *Spruce, 27*, type (in Curtis Herb.); Amazonas, Marmellos, and Jurná, *E. Ule*, in Ule, Myc. Brasil., 42.

23. S. cyphelloides Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 331. 1868; Sacc. Syll. Fung. **6:** 558. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 172. 1890; Lloyd, Myc. Writ. **4.** Stip. Stereums, 35. 1913. Plate 3, fig. 20.

Type: in Kew Herb. and Curtis Herb.

Pileus small, flabelliform or spatulate, drying pinkish buff, longitudinally fibrillose, bibulous, the margin entire, narrowed behind into a short stem-like base; in structure up to 600 μ thick, composed of thin-walled, hyaline hyphae $2\frac{1}{2}$–3 μ in diameter, interwoven in the subhymenium; hymenium even, drying of same color as upper surface of pileus; no conducting organs, gloeocystidia, nor cystidia; spores hyaline, even, 4–5× 3–$3\frac{1}{2}$ μ.

Pileus 3–6 mm. wide, 5–7 mm. long.

On a bank among moss. West Indies. February and March.

S. cyphelloides differs from most Stereums in not having a hard compact structure, as in *S. rameale*, for example; it is of soft and bibulous texture but rather too thick for a *Cyphella*. The stem-like base is flattened in the same plane with the pileus and has the hymenium continued along its whole length, hence it is merely a narrowed portion of the pileus.

Specimens examined:

Cuba: *C. Wright, 511*, type (in Curtis Herb.).

Porto Rico: Monte Cerrote, near Adjuntas, *N. L. Britton & Stewardson Brown, 5449* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56261).

24. S. Hartmanni (Mont.) Lloyd, Myc. Writ. **4.** Stip. Stereums, 34. *text f. 553.* 1913. Plate 3, fig. 21.

Thelephora Hartmanni Montagne, Ann. Sci. Nat. Bot. II. **20:** 366. 1843; Syll. Crypt. 176. 1856; Sacc. Syll. Fung. **6:** 535. 1888.—*T. dissecta* Léveillé, Ann. Sci. Nat. Bot. III. **5:** 146. 1846; Sacc. Syll. Fung. **6:** 531. 1888; Lloyd, *loc. cit.*, 39.

Illustrations: Lloyd, *loc. cit.*

Type: authentic specimen from Montagne in Kew Herb.

Pilei solitary or cespitose, sessile or barely stipitate, coriaceous, thin, white, wedge-shaped, deeply cleft into narrow segments which are more or less pectinate along their margins and apex and have these teeth-like portions incurved; no cystidia; no gloeocystidia; spores hyaline, even, subglobose, 4–5×3½–4 μ.

Pileus 7–50 mm. long, 5–40 mm. broad.

On decaying wood and bark and dead herbaceous stems. Carolina to Bolivia. July to September in West Indies and February in Bolivia.

The pilei of *S. Hartmanni* occur in small tufts of two or three in the specimens which have been seen; they are very dainty and unique by the narrow pectinate margins and tips which are more or less incurved; rarely these teeth occur on the lower surface of segments of the pileus in a manner suggestive of teeth of an *Irpex* but they are in most cases marginal. The maximum dimensions of the pileus are from the Porto Rican collection; the other specimens do not have pilei more than 2–3 cm. long. I have not seen the type of *Thelephora dissecta* Lév., which was collected in Guadeloupe; the description agrees so well with *S. Hartmanni* that I have followed Lloyd's conclusion that *T. dissecta* is a synonym of *S. Hartmanni.*

Specimens examined:

Carolina: *Hartmann*, authentic, from Montagne (in Kew Herb.).

Porto Rico: Luquillo Mountain, *P. Wilson, 313* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56302).

St. Kitt's: *N. L. Britton & J. F. Cowell, 706*, comm. by N. Y. Bot. Gard. Herb.

Bolivia: *R. E. Fries, 272*, comm. by L. Romell, 447 (in Mo. Bot. Gard. Herb., 54780).

25. S. craspedium (Fries) Burt, n. comb. Plate 3, fig. 22.

Thelephora (*Merisma*) *craspedia* Fries, R. Soc. Sci. Upsal. Actis III. **1:** 108. 1851; Sacc. Syll. Fung. **6:** 533. 1888; Lloyd, Myc. Writ. **4.** Stip. Stereums, 34. 1913.

Type: a fragment in Kew Herb., according to Lloyd.

Erect, cespitose, membranaceous-soft, fragile when dry, palmately branched, complanate, ribbed, dilated above, lacerate-fimbriate at the apex; hymenium definitely inferior, pallid gilvus; spores white.

In pine woods, Pico de Orizaba, 10,000 ft. altitude, Mexico. Collected by Liebman.

An extraordinary species, similar to *Thelephora tuberosa* and *Tremellodendron pallidum* but with the substance thin, somewhat membranaceous, fragile when dry, and with the pileus foliaceous-complanate, ribbed (ribs commonly simple as in *Alaria*), very distinct. More than an inch high. Hymenium occupying the whole lower surface, at length floccose-collapsing and often foveolate, almost porose; basidia evidently 4-spored.

The above is a translation of the original description. I did not find the type in Herb. Fries at Upsala nor see the fragment which Lloyd has reported as preserved at Kew.

The specimen from Dutch Guiana, which is cited below, is so similar in aspect to *Tremellodendron pallidum* that it is probably *S. craspedium*. This cluster is 7 cm. in diameter and 3–4 cm. high, and agrees well with details of the original description. The basidia are simple, only detached spores found. These are hyaline, even, globose, 3 μ in diameter.

Specimens examined:

Dutch Guiana: *Jacob Samuels* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56300).

26. S. petalodes Berkeley, Ann. & Mag. Nat. Hist. II. **9:** 198. 1852; Sacc. Syll. Fung. **6:** 557. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 165. 1890; Lloyd, Myc. Writ. **4.** Stip. Stereums, 32. *text f. 551.* 1913. Plate 3, fig. 23.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. according to Lloyd.

Pileus coriaceous, sessile, at first infundibuliform, soon split into numerous lobes which are again more or less divided, dull reddish brown, marked with long grooves or striae; hymenium pale, much cracked, sometimes so much so as to be nearly granulated.

San Domingo. Coll., *Salle, 52.*

The above is the original description of *S. petalodes*, a species of which I have seen no specimen. Lloyd's figure of the type shows the fructification to be a rosette-shaped mass 4 cm. high and 6 mm. in diameter, composed of many elongated pileate flaps, each of which is flattened and up to 7 mm. broad. No record was published by Berkeley as to whether *S. petalodes* grows on ground or on wood.

27. S. anastomosans (Berk. & Curtis) Lloyd, Myc. Writ. **4.** Stip. Stereums, 35. 1913.

Thelephora anastomosans Berkeley & Curtis, Linn. Soc. Bot. Jour. **10:** 329. 1868; Sacc. Syll. Fung. **6:** 534. 1888.

Type: in Curtis Herb. and Kew Herb.

Fructification stipitate, white, with the pileus divided into many segments; pileate branches and branchlets more or less laterally grown together above, somewhat flabelliform and fimbriate, below more or less distinct or confluent into the common stem; hymenium even, inferior; no cystidia nor gloeocystidia; spores copious, hyaline, even, subglobose, 4–4½ × 3½–4 μ.

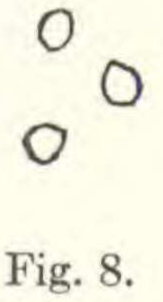


Fig. 8. *S. anastomosans.* Spores × 665. From type.

Fructifications about 2½ cm. high.

On stump. Cuba. October.

It was noted by the authors of the species that *S. anastomosans* is allied to *S. craspedium*, but the divisions of its pileus are narrower than I understand them to be in the latter. *S. anastomosans* is somewhat suggestive of *S. Hartmanni* and *S. proliferum* but differs in having many pileate divisions grow out from a common trunk so as to form a rosette-like mass, as in doubled forms of *Thelephora caryophyllea*.

Specimens examined:

Cuba: *C. Wright, 280*, type (in Curtis Herb.).

28. S. proliferum (Berk.) Lloyd, Myc. Writ. **4.** Stip. Stereums, 34. *text f. 554.* 1913. Plate 4, fig. 24.

Thelephora prolifera Berkeley, Hooker's Jour. Bot. **8:** 272. 1856; Sacc. Syll. Fung. **6:** 542. 1888.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and Curtis Herb.

Fructifications cespitose, stipitate, coriaceous, erect, white, now between light buff and cartridge-buff throughout; stem cylindric, branched above, the branches either slender, cylindric, sterile bodies, or flattened, membranous pilei 1–2 mm. broad, 1–1½ cm. long; hymenium on the lower side, even; a few detached spores hyaline, even, 3½×3 μ, none found on basidia.

Fructifications about 3 cm. high; stems ½ mm. in diam.; pileate branches 1–1½ cm. long, 1–2 mm. broad.

On roots of trees. Brazil.

Berkeley described *S. proliferum* as somewhat creeping and having the branches with tips attached again to the matrix by means of large, orbicular, radiated and laciniated disks. These characters should render this species easy for the collector to recognize, but the herbarium specimen which I studied did not show the above feature noticeably; it had somewhat the aspect of *S. Hartmanni* but without the pectinate margins of the latter. The hymenium of the specimen studied is in poor condition and the spore characters, as given above, are uncertain. I studied for N. Y. Bot. Gard. Herb., No. 508, a fungus collected at Church Cove, Bermuda, which has the general aspect of *S. proliferum* but with spores hyaline, even, 13–16×6–7 μ, and is probably a distinct species. Still it is well to keep *S. proliferum* in mind in connection with species of the West Indies.

Specimens examined:

Brazil: Rio Negro, *Spruce, 17*, type (in Curtis Herb.).

29. S. caespitosum Burt, n. sp. Plate 4, fig. 25.

Type: in Burt Herb.

Fructifications coriaceous, thin, cespitose, effuso-reflexed, with the resupinate portion small and bearing a cluster of broader and longer, imbricate, pileate lobes which are somewhat furfuraceous or with minute tomentum on the upper side, glabrate towards the margin, drying tawny and zonate with ochraceous, tawny zones, the margin entire; hymenium even, whitish to light buff; in structure 500–700 μ thick, with the intermediate layer bordered above by a narrow, slightly colored zone and composed of densely longitudinally arranged, hyaline, thick-walled hyphae 3½ μ in diameter; hymenial layer up to 120 μ thick, containing numerous slender, flexuous gloeocystidia

$3\frac{1}{2}$–5 μ in diameter near the base, tapering outward; no colored conducting organs nor noteworthy paraphyses; spores hyaline, even, 4–$4\frac{1}{2}\times$ 3–$3\frac{1}{2}$ μ, copious.

Resupinate portion covers area 6×5 mm., reflexed lobes 5–10 mm. in diameter—about 10 in the cluster.

On broken lateral stub of dead limb of a frondose species. Jamaica. January. Probably rare.

Viewed from above, *S. caespitosum* has the general aspect and coloration of species of *Stereum* in sections having stems, as *S. pergamenum* and *S. decolorans*, but is excluded from these sections by attachment to the substratum by a distinctly resupinate portion. The species is unique in the effuso-reflexed section in the above resemblance, and with additional characters of clustered, imbricated habit of growth and presence of gloeocystidia, should be readily recognized.

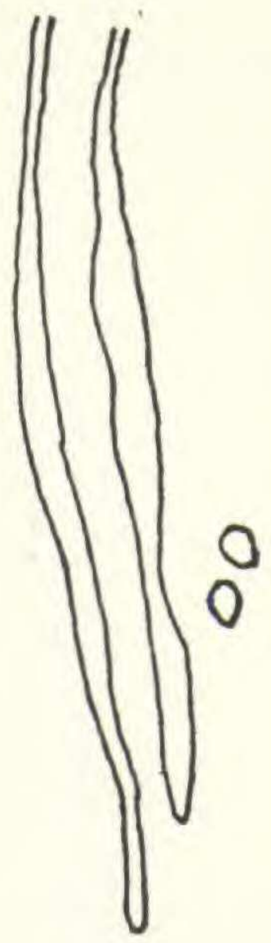


Fig. 9. *S. caespitosum.* Gloeocystidia and spores × 665. From type.

Specimens examined:

Jamaica: Moneague to Union Hill, *W. A. Murrill, 1181*, type, comm. by N. Y. Bot. Gard. Herb.

30. S. fuscum Schrader ex Quelet, Fl. Myc. France, 14. 1888; Bresadola, I. R. Accad. Agiati Atti III. **3**: 106. 1897.

Plate 4, fig. 26.

Thelephora fusca Schrader, Spic. Fl. Germ. 184. 1794; Persoon, Syn. Fung. 568. 1801, and Myc. Eur. **1**: 122. 1822 (in both places renaming the species *T. bicolor*); Fries, Syst. Myc. **1**: 438. 1821 (following Persoon).—*T. bicolor* Persoon, Syn. Fung. 568. 1801; Fries, Syst. Myc. **1**: 438. 1821.—*Stereum bicolor* Persoon, Myc. Eur. **1**: 122. 1822 (under **** *Stereum* of *Thelephora*); Fries, Epicr. 549. 1838; Hym. Eur. 640. 1874; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 195. 1888; Sacc. Syll. Fung. **6**: 565. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 177. 1890.—*S. coffeatum* Berk. & Curtis, Grevillea **1**: 164. 1873; Sacc. Syll. Fung. **6**: 568. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 190. 1890.

Illustrations: Fries, Icones Hym. *pl. 197. f. 2*; Karsten, Icones Hym. *pl. 2. f. 9.*

Fructifications somewhat membranaceous, soft, spongy, sometimes resupinate, usually becoming conchate-reflexed, often imbricated, villose, becoming glabrous, somewhat concentrically sulcate, drying snuff-brown to bister; hymenium even, glabrous, white, drying cream-color to pallid mouse-gray; in structure 1000 μ thick, composed of longitudinally and loosely interwoven hyphae 3 μ in diameter, colored towards the upper surface, hyaline towards the hymenium; hymenium not zonate, containing flexuous gloeocystidia 20–60×5–7 μ, rarely 90 μ, long; spores hyaline, 3–4½×2–3 μ.

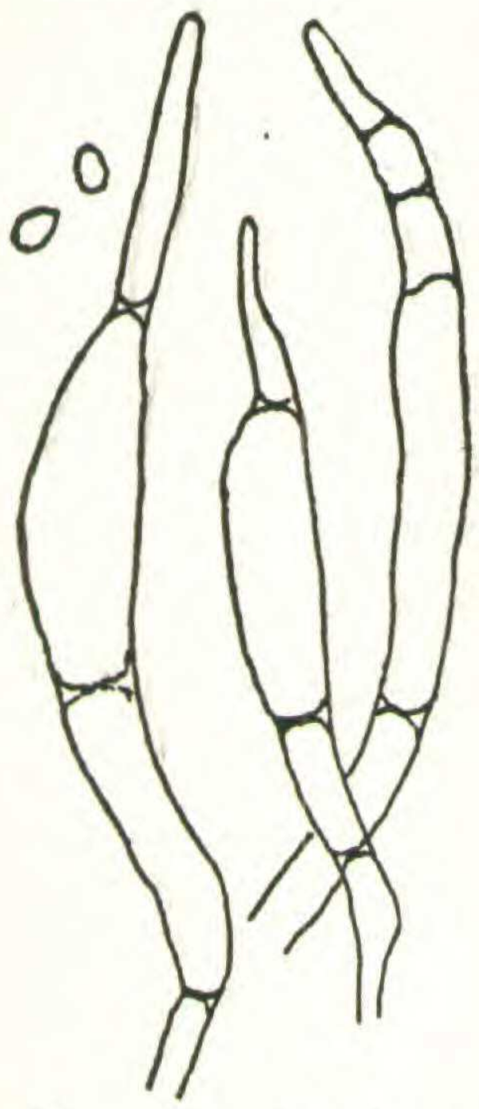


Fig. 10. *S. fuscum*. Gloeocystidia and spores × 665.

Reflexed pileus 1–4 cm. long, 2–5 cm. wide; resupinate specimens 3–10×1–3 cm.

On rotting frondose limbs usually, but sometimes on pine. Canada to Texas, westward to Oregon, in the West Indies, and also in Europe. April to December. Not rare.

Reflexed specimens of *S. fuscum* may be recognized at sight by the soft, pliant pileus, brown and felt-like above, with a white hymenium. Gloeocystidia are so rare in the hymenium of a *Stereum* that their presence in abundance in this species affords a decisive specific character. Wholly resupinate specimens have the color of the hymenium of reflexed fructifications and have similar consistency and gloeocystidia. So many reflexed species occur resupinate that one should be sure to gather the more or less reflexed fructifications which can usually be secured associated with the resupinate specimens. Since both Persoon and Fries recognized the priority of Schrader's specific name *fuscum* and substituted *bicolor*, presumably because highly distinctive and appropriate for the species, the restoration of the original name by recent mycologists seems just.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1207; Ell. & Ev., Fungi Col., 1019; Rabenhorst, Fungi Eur., 3233; Ravenel, Fungi Am., 9; Ravenel, Fungi Car. **2**: 33; de Thümen, Myc. Univ., 1704.

Finland: Mustiala, *P. A. Karsten*, in de Thümen, Myc. Univ., 1704.
Sweden: Femsjö, *L. Romell, 402.*
England: Selby, *E. A. Burt.*
France: Allier, *H. Bourdot, 16141.*
Hungary: *Kmet*, comm. by G. Bresadola.
Canada: *J. Macoun, 76, 280.*
Ontario: Ottawa, *J. Macoun, 21, 59*; Toronto, *J. H. Faull*, Univ. Toronto Herb., 361 (in Mo. Bot. Gard. Herb., 44863).
Vermont: Middlebury, *E. A. Burt;* North Ferrisburg, *E. A. Burt.*
New York: Bronx Park, New York, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 54392), and *W. A. Murrill* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56773); Staten Island, *W. H. Ballou* (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 56774); Syracuse, *D. C. Mills* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56281).
Pennsylvania: Kittanning, *D. R. Sumstine;* West Chester, *Everhart & Haines*, in Ellis, N. Am. Fungi, 1207.
District of Columbia: *C. L. Shear, 1039*; Takoma Park, *C. L. Shear, 954.*
South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. **2**: 33; Santee Canal, *H. W. Ravenel, 910* (in Curtis Herb.), and Curtis Herb., 2923, type of *Stereum coffeatum* (in Kew Herb.); Salem, *Schweinitz* (in Herb. Schweinitz).
Georgia: Atlanta, *E. Bartholomew, 5680* (in Mo. Bot. Gard. Herb., 44219); Tipton, *C. J. Humphrey, 156.*
Florida: Gainesville, *H. W. Ravenel*, in Ravenel, Fungi Am., 9; Lake City, *P. L. Ricker, 898*; New Smyrna, *C. G. Lloyd, 2118.*
Alabama: Auburn, *L. M. Underwood*, comm. by U. S. Dept. Agr. Herb., *F. S. Earle* (in Mo. Bot. Gard. Herb., 5058), and *F. S. Earle & C. F. Baker;* Fayette Co., *P. V. Siggers*, comm. by A. H. W. Povah, 15 (in Mo. Bot. Gard. Herb., 9226); Montgomery Co., *R. P. Burke, 33* (in Mo. Bot. Gard. Herb., 15763).
Mississippi: Chicou (in Mo. Bot. Gard. Herb., 43014).
Louisiana: Abita Springs, *A. B. Langlois*; New Orleans, *F. S.*

Earle (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56775); St. Martinville, *A. B. Langlois, bz, 2095*, and a specimen comm. by Lloyd Herb., 2737.

Texas: San Antonio, *W. H. Long, 21703* (in Mo. Bot. Gard. Herb., 55164).

Ohio: *A. P. Morgan* (in Lloyd Herb.) and *C. G. Lloyd*, in Ell. & Ev., Fungi Col., 1019; Linwood, *C. G. Lloyd, 1154, 1326*; Norwood, *C. G. Lloyd, V.*

Indiana: Greencastle, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56276, 56278); Hibernian Mills, *Whetzel & Reddick*, comm. by D. Reddick, 3.

Wisconsin: Madeline Island, *V. B. Walker, 6a* (in Mo. Bot. Gard. Herb., 8359); Madison, *Miss A. O. Stucki, 26.*

Missouri: Marianna, *H. von Schrenk* (in Burt Herb. and Mo. Bot. Gard. Herb., 42836); Oran, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42835); Perryville, *C. H. Demetrio*, in Rabenhorst, Fungi Eur., 3233; Williamsville, *B. M. Duggar, 482.*

Arkansas: Cass, *W. H. Long, 19923* (in Mo. Bot. Gard. Herb., 13266); Levisque, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5057).

Idaho: Kooskia, *J. R. Weir, 589* (in Mo. Bot. Gard. Herb., 56776).

British Columbia: Agassiz, *J. R. Weir, 603* (in Mo. Bot. Gard. Herb., 36748).

Oregon: Corvallis, *C. E. Owens, 2037* (in Mo. Bot. Gard. Herb., 43871).

Cuba: Alto Cedro, *L. M. Underwood & F. S. Earle, 1571, 1581*, comm. by N. Y. Bot. Gard. Herb.; Baracoa, *L. M. Underwood & F. S. Earle, 504*, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Cinchona, *W. A. & E. L. Murrill, 462*, comm. by N. Y. Bot. Gard. Herb.; Hope Gardens, *F. S. Earle, 500*, comm. by N. Y. Bot. Gard. Herb.; Mandeville, *A. E. Wight*, comm. by W. G. Farlow; Troy and Tyre, *W. A. Murrill & W. Harris, 1073*, comm. by N. Y. Bot. Gard. Herb.

31. S. rufum Fries, Epicr. 553. 1838; Hym. Eur. 644. 1874; Sacc. Syll. Fung. **6**: 575. 1888; Romell, Bot. Not. **1895**: 71. 1895. Plate 4, fig. 27.

Thelephora rufum Fries, Elenchus Fung. **1**: 187. 1828.—*Cryptochaete rufa* (Fries) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 408. 1889.—*Tubercularia pezizoidea* Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 301. 1832; Sacc. Syll. Fung. **4**: 644. 1886.—*Hypocrea Richardsonii* Berkeley & Montagne, Grevillea **4**: 14. 1875; Sacc. Syll. Fung. **2**: 528. 1883; Ellis & Everhart, N. Am. Pyrenomycetes, 86. 1892.—*Corticium pezizoideum* (Schw.) von Schrenk, Torr. Bot. Club Bul. **21**: 385. *pl. 218.* 1894.

Illustrations: von Schrenk, Torr. Bot. Club Bul. **21**: *pl. 218.* 1894.

Type: in Herb. Fries.

Fructifications scattered or gregarious, coriaceous-fleshy, bursting out from the bark, verruciform, plicate-tuberculose,

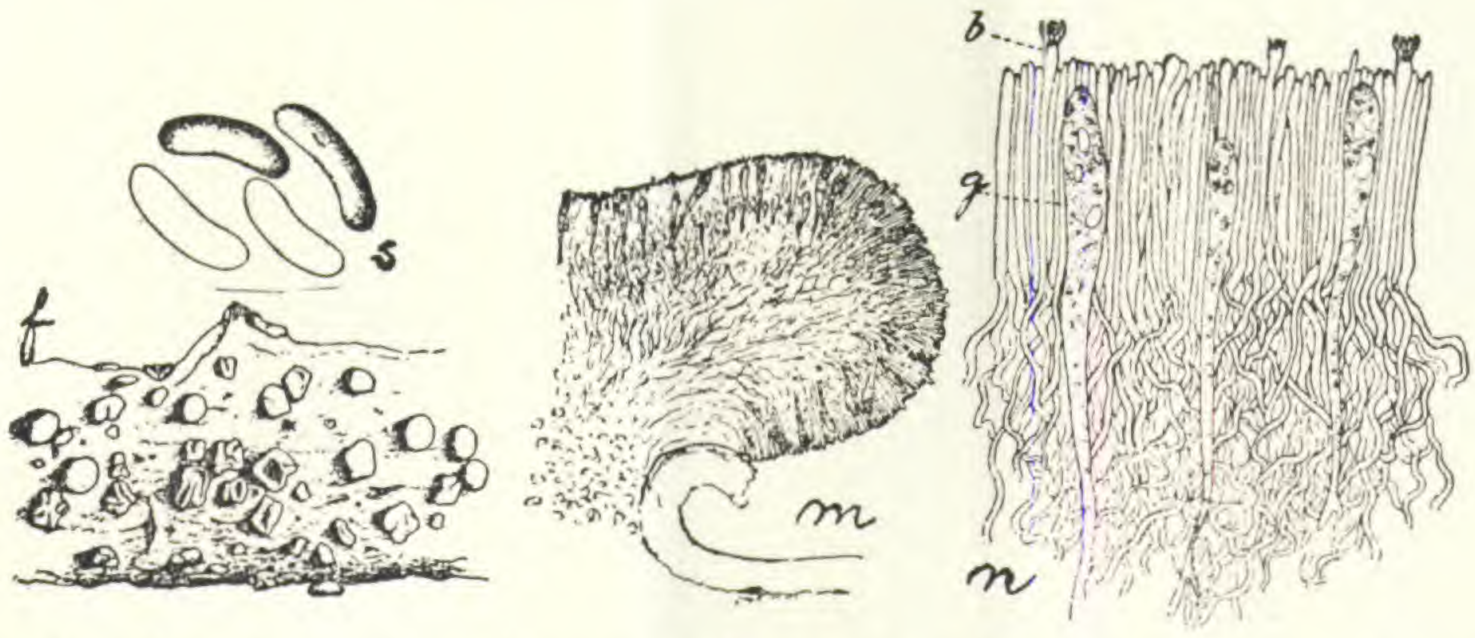


Fig. 11. *S. rufum.* Fructifications, *f;* section of fructification, *m;* section of hymenial region, *n;* spores, *s.* After von Schrenk.

peltate, vinaceous-brown to hematite-red, under side glabrous, the margin free all around; hymenium becoming coarsely wrinkled, vinaceous-brown, often grayish pruinose; in structure 1–2 mm. thick at the center, 600–800 μ thick in the marginal portion, composed of ascending, loosely interwoven, incrusted, hyaline hyphae 4–4$\frac{1}{2}$ μ in diameter over the incrustation; flexuous gloeocystidia 50–90$\times$7–10 μ are scattered in or near the hymenium but not protruding; spores white in spore collection, even, curved, 6–8$\times$1$\frac{1}{2}$–2 μ.

Fructifications 2–4 mm. in diameter.

On dead fallen *Populus tremuloides.* Newfoundland to Massachusetts and westward to North Dakota and Colorado. March to December. Common. Occurs in Scandinavia also.

S. rufum may be recognized at sight by its occurrence on prostrate poplar limbs and logs in the form of small vinaceous fructifications with the hymenium gyrosely wrinkled. The fructifications become peltate when full grown, attached by the center, and with the marginal portions free and turned outward.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 1817, under the name *Corticium rufo-marginatum*, and 2716; Ellis, N. Am. Fungi, 1329; Romell, Fungi Scand. Exs., 123; Shear, N. Y. Fungi, 88.

Norway: Christiania, *M. N. Blytt*, authentic specimen (in Herb. Fries).

Sweden: Stockholm, *L. Romell*, in Romell, Fungi Scand. Exs., 123; Upsala, *L. Romell, 39.*

Newfoundland: *B. L. Robinson & H. von Schrenk* (in Mo. Bot. Gard. Herb., 42944); Bay of Islands, *A. C. Waghorne* (in Mo. Bot. Gard. Herb., 17692).

Ontario: Toronto, *T. Langton*, Univ. Toronto Herb., 595 (in Mo. Bot. Gard. Herb.).

Maine: Orono, *F. L. Harvey, 6* (in Mo. Bot. Gard. Herb., 16620); Portage, *L. W. Riddle, 10.*

New Hampshire: Shelburne, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 14796).

Vermont: Middlebury, *E. A. Burt*, two collections; North Ferrisburg, *E. A. Burt.*

Massachusetts: Peabody, *A. R. Sweetser*; Waverley, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 16623).

New York: Alcove, *C. L. Shear*, in Shear, N. Y. Fungi, 88; East Galway, *E. A. Burt;* Ithaca, *G. F. Atkinson* (in Mo. Bot. Gard. Herb., 4775); Willsboro Point, *C. O. Smith*, in Bartholomew, Fungi Col., 1817.

Pennsylvania: Trexlertown, *W. Herbst.*

Michigan: Mackinac Island, *E. T. & S. A. Harper, 707;* Northport, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 22481).

Wisconsin: La Crosse, *W. Trelease* (in Mo. Bot. Gard. Herb., 14794); Madison, *W. Trelease*, in Ellis, N. Am. Fungi, 1329, and (in Mo. Bot. Gard. Herb., 14794, 16621); Palmyra, *Miss A. O. Stucki, 27*; Syene, *W. Trelease, 3022* (in Mo. Bot. Gard. Herb., 14793).

Nebraska: Lincoln, *Miss L. B. Walker, 7* (in Mo. Bot. Gard. Herb., 44818).

North Dakota: Fargo, *F. J. Seaver, 25, 54* (in Mo. Bot. Gard. Herb., 16222, 16637).

Montana: Helena, *F. W. Anderson, 202* (in Mo. Bot. Gard. Herb., 21165).

Colorado: Blind Cañon Placer, *C. L. Shear, 1021*; Golden, *E. Bartholomew & E. Bethel*, in Bartholomew, Fungi Col., 2716, and *E. Bethel & L. O. Overholts*, comm. by L. O. Overholts, 1754 (in Mo. Bot. Gard. Herb., 54875); Ouray, *C. L. Shear, 1187*.

32. S. Pini Fries, Epicr. 553. 1838; Hym. Eur. 643. 1874; Sacc. Syll. Fung. **6**: 574. 1888. Plate 4, fig. 28.

Thelephora Pini Fries, Syst. Myc. **1**: 443. 1821; Elenchus Fung. **1**: 187. 1828.—*Sterellum Pini* (Schleich.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 405. 1889.

Illustrations: Smith, Brit. Basidiomycetes, *text f. 98 E, F.*

Fructifications gregarious, coriaceous-cartilaginous, orbicular, resupinate, with the margin free and attached by the center, shield-shaped, finally bullate, drying rigid, Benzo-brown; hymenium wood-brown to Benzo-brown, somewhat pruinose, becoming somewhat tuberculose; in structure 500 μ thick, thinning out towards the margin, with the intermediate layer bordered on each side by a narrow, colored zone and composed of longitudinally arranged, densely interwoven, hyaline hyphae with walls gelatinously modified, the subhymenium olivaceous-colored; cystidia incrusted, 24×8 μ, sometimes very few to be found; fusoid or irregular gloeocystidia, 30–40×10–15 μ, are sparingly present in or near the hymenium; spores hyaline, even, curved, 5–6 ×2–2$\frac{1}{2}$ μ.

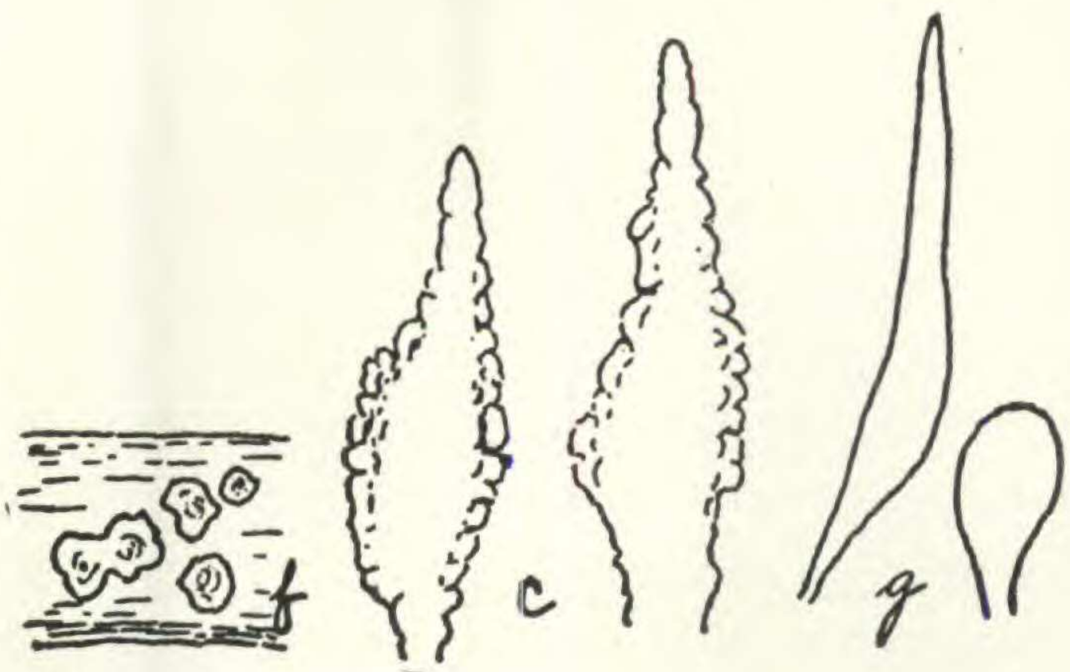


Fig. 12. *S. Pini.* Fructifications, *f*, natural size; cystidia, *c*, and gloeocystidia, *g*, × 665.

Fructifications 1–4 mm. in diameter.

On bark of fallen limbs of *Pinus resinosa*. Maine and New Hampshire. August. Rare.

The fructifications are so near the color of the bark of the dead pine limbs upon which they grow that they are likely to be overlooked, or, if collected, roughly classed among the *Discomycetes* on account of their resemblance to these fungi in aspect. The occurrence on pine bark, small, shield-shaped fructifications Benzo-brown in color, and showing in section both cystidia and gloeocystidia are a combination of characters which should not fail to identify this species.

Specimens examined:

Exsiccati: Krieger, Fungi Sax., 364; Rabenhorst, Herb. Myc., 213.

Finland: Mustiala, *P. A. Karsten.*

Sweden: Stockholm, *L. Romell, 32.*

Germany: Dresden, in Rabenhorst, Herb. Myc., 213; Königstein, Saxony, *W. Krieger*, in Krieger, Fungi Sax., 364.

France: St. Priest, Allier, *H. Bourdot, 15067.*

Maine: *J. Blake, 659* (in Curtis Herb.).

New Hampshire: Chocorua, *W. G. Farlow, 37.*

33. S. purpureum Persoon, Roemer Neues Mag. Bot. **1:** 110. 1794; Obs. Myc. **2:** 92. 1799; Fries, Epicr. 548. 1838; Hym. Eur. 639. 1874; Berkeley, Brit. Fung. 270. 1860; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10:** 194. 1888; Sacc. Syll. Fung. **6:** 563. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 186. 1890. Plate 4, fig. 29.

Thelephora purpurea Persoon, Syn. Fung. 571. 1801; Myc. Eur. **1:** 121. 1822; Fries, Syst. Myc. **1:** 440. 1821.—*Stereum vorticosum* Fries, Obs. Myc. **2:** 275. 1818; Epicr. 548. 1838; Hym. Eur. 639. 1874; Sacc. Syll. Fung. **6:** 563. 1888.

Illustrations: Fl. Danica **3:** *pl. 534. f. 4;* Hussey, Ill. Br. Myc. *pl. 20. f. A;* Istvanffi, Jahrbüch. f. wiss. Bot. **29:** *pl. 6. f. 37–39;* Lanzi, Fungi di Roma, *pl. 11. f. 2*: Sowerby, Col. Figs. Eng. Fungi, *pl. 388. f. 1.*

Type: authentic specimen from Persoon in Kew Herb.

Fructifications coriaceous-soft, drying rigid, sometimes resupinate, usually more or less reflexed, often imbricated, the

upper side villose-tomentose, light buff to cartridge-buff, the margin entire; hymenium even, glabrous, light purple-drab to dark vinaceous-drab; in structure about 500–800 μ thick excluding the tomentum, with the intermediate layer more loosely arranged on its under side in the subhymenial region and containing pyriform, or subglobose, vesicular organs 15–30×12–25 μ; no cystidia; spores hyaline, even, flattened on one side, 5–7×2½–3 μ.

Fructifications with resupinate portion about 1–2 cm. in diameter; reflexed portion 5–20 mm. broad, and sometimes crisped or lobed with lobes 5 mm. in diameter.

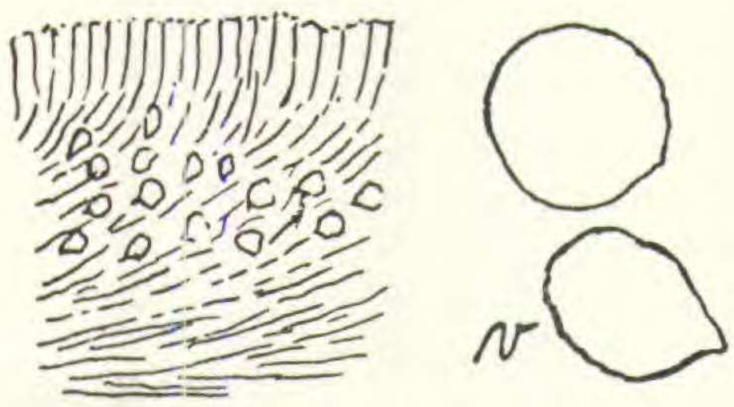


Fig. 13. *S. purpureum.* Section of hymenial region × 90, and vesicular bodies × 665. From authentic specimen.

On dead stumps and logs of *Populus*, *Betula*, and other frondose species. Newfoundland to Delaware and westward to British Columbia and Oregon, also in Uruguay and in Europe. June to April. Common but not ranging into torrid regions.

S. purpureum is usually recognized by its buff, tomentose pileus, purplish hymenium which does not bleed when wounded, and occurrence on poplar. Sectional preparations show characteristic vesicular organs in the subhymenial region, such as are present in the closely related *S. rugosiusculum*, but no hair-like cystidia in the hymenium, by the absence of which *S. purpureum* is distinguished from the latter.

The authentic specimen of *S. vorticosum* in Herb. Fries at Upsala is 2–3×1½ cm., narrowly reflexed, with dark purplish hymenium, and with the usual microscopic structure and spores of *S. purpureum*.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 3489; Berkeley, Brit. Fungi, 147; Cooke, Fungi Brit., 12; Ell. & Ev., N. Am. Fungi, 2018, 2601; Klotzsch, Fungi Germ., 50; Krieger, Fungi Sax., 1852; Rabenhorst, Herb. Myc., 504; Romell, Fungi Scand. Exs., 27; Shear, N. Y. Fungi, 311.

Europe: authentic specimen of *Thelephora purpurea* from Persoon (in Herb. Hooker in Kew Herb.).

Sweden: *E. Fries* (in Kew Herb.); Femsjö, authentic specimen of *Stereum vorticosum* (in Herb. Fries); Stockholm, *L. Romell, 34, 288*, and in Romell, Fungi Scand. Exs., 27.

England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 147; Hampstead, *M. C. Cooke*, in Cooke, Fungi Brit., 12.

France: Corrombles, comm. by Lloyd Herb., 3355; St. Priest, Allier, *H. Bourdot, 12459, 12461*.

Germany: *Klotzsch*, in Klotzsch, Fungi Germ., 50; Dresden, in Rabenhorst, Herb. Myc., 504; Winterberge, *Wagner & Krieger*, in Krieger, Fungi Sax., 1852.

Austria: *Stapf*, Fl. Exs. Austro-Hungarica, 3543 (in Mo. Bot. Gard. Herb., 5125, 715171).

Italy: Trento, *G. Bresadola*.

Newfoundland: Bay of Islands, *A. C. Waghorne, 20, 86* (in Mo. Bot. Gard. Herb., 5091, 5092).

Ontario: Harraby, *E. T. & S. A. Harper, 641;* Ottawa, *J. Macoun, 17, 39; J. M. Macoun*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56085); Port Credit, *J. H. Faull*, Univ. Toronto Herb., 646 (in Mo. Bot. Gard. Herb., 44944); Toronto, *R. P. Wodehouse, J. H. Faull, G. H. Graham*, Univ. Toronto Herb., 310, 311, 677, respectively (in Mo. Bot. Gard. Herb., 44887, 44889, 44920); Wilcox Lake, *J. H. Faull*, Univ. Toronto Herb., 377 (in Mo. Bot. Gard. Herb., 44929).

Maine: Manchester, *F. L. Scribner*, comm. by U. S. Dept. Agr. Herb.; Orono, *F. L. Harvey, 3* (in Mo. Bot. Gard. Herb., 43850) and in Ell. & Ev., N. Am. Fungi, 2018; Portage, *L. W. Riddle, 6*.

Vermont: Brattleboro, *E. A. Burt;* Little Notch, *E. A. Burt;* Middlebury, *E. A. Burt*, three collections; North Ferrisburg, *E. A. Burt;* Ripton, *E. A. Burt*, three collections; Walden, *L. S. Orton, 4* (in Mo. Bot. Gard. Herb., 44081).

Massachusetts: Cambridge (in Mo. Bot. Gard. Herb., 5094).

Connecticut: *C. C. Hanmer, 2326, 2061* (in Mo. Bot. Gard. Herb., 43847/8).

New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5151, 5156); Alcove, *C. L. Shear, 1120, 1122*, and in Shear, N. Y. Fungi, 311; East Galway, *E. A. Burt;* Ithaca, *G. F. Atkinson, 2093, 2141, C. J. Humphrey, 307, H. S. Jackson & C. Lewis,*

19396; Long Lake, *A. H. W. Povah* (in Mo. Bot. Gard. Herb., 9227); North Elba, *C. H. Kauffman, 8* (in Mo. Bot. Gard. Herb., 16701); Rome, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 55022, 55024/5).

Pennsylvania: Bethlehem, *Schweinitz* (in Herb. Schweinitz); Trexlertown, *W. Herbst, 16, 28*, and comm. by Lloyd Herb., 3603.

Delaware: Wilmington, *A. Commons*, in Ell. & Ev., N. Am. Fungi, 2601.

Ohio: Norwood, *C. G. Lloyd, 1787*, and (in Mo. Bot. Gard. Herb., 5093).

Indiana: Indianapolis, *J. B. Demaree*, comm. by G. W. Hoffer (in Mo. Bot. Gard. Herb., 54790); Lafayette, *C. R. Orton, 5* (in Mo. Bot. Gard. Herb., 44082).

Wisconsin: Madison, *W. Trelease* (in Mo. Bot. Gard. Herb., 5043); Star Lake, *Miss A. O. Stucki*, Univ. Wis. Herb., 59.

Minnesota: Park Rapids, comm. by E. L. Jensen, 10 (in Mo. Bot. Gard. Herb., 11100).

Montana: Helena, Monarch, *J. R. Weir, 587, 598* (in Mo. Bot. Gard. Herb., 56738, 56739).

Wyoming: Boulder, *F. S. Wolpert*, comm. by J. R. Weir, 7949 (in Mo. Bot. Gard. Herb., 56219).

Idaho: Priest River, *J. R. Weir, 10.*

British Columbia: Sidney, *J. Macoun, 74* (in Mo. Bot. Gard. Herb., 55352); Vancouver Island, *J. Macoun, 51* (in Mo. Bot. Gard. Herb., 5737), and comm. by J. Demaree, V88 (in Mo. Bot. Gard. Herb., 22752).

Washington: Bingen, *W. N. Suksdorf, 766, 767;* Easton, *C. J. Humphrey, 6449;* Olympia, *C. J. Humphrey, 6292;* Seattle, *S. M. Zeller, 108* (in Mo. Bot. Gard. Herb., 44140).

Oregon: Corvallis, *C. E. Owens, 2076* (in Mo. Bot. Gard. Herb., 44038).

Uruguay: Montevideo, W. Mitten Herb., 1325 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56691).

34. S. rugosiusculum Berk. & Curtis, Grevillea **1:** 162. 1873; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10:** 193. 1888; Sacc. Syll. Fung. **6:** 567. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 187. 1890. Plate 4, fig. 30.

Stereum Micheneri Berk. & Curtis emend. Massee, Linn. Soc. Bot. Jour. **27:** 183. 1890.—*S. Micheneri* Berk. & Curtis, Grevillea **1:** 162. 1873 (in part). See Ann. Mo. Bot. Gard. **1:** 214. 1914.—*Corticium Nyssae* Berk. & Curtis, Grevillea **1:** 166. 1873; Sacc. Syll. Fung. **6:** 609. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 120. 1890.—*C. siparium* Berk. & Curtis, Grevillea **1:** 177. 1873; Sacc. Syll. Fung. **6:** 636. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 139. 1890.

Illustrations: Berkeley, Ann. & Mag. Nat. Hist. I. **1:** 94. *pl. 5. f. 45.*

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous-soft, rarely resupinate, usually more or less broadly reflexed, upper surface tomentose, spongy, sometimes with projecting hairs collapsed together into a plane or wrinkled surface, drying cartridge-buff to cinnamon-buff, the margin entire; hymenium even, drying vinaceous-buff to fawn color; in structure up to 1–1½ mm. thick inclusive of the tomentum, with the intermediate layer on its under side in the subhymenial region, loosely interwoven, and containing more or less numerous, pyriform vesicular bodies 15–30×10–20 μ; cystidia slender, thin-walled, tapering hairs, not incrusted, 4–5 μ in diameter, protruding up to 25 μ beyond the basidia; spores white in spore collection, even, flattened on one side, 4½–6×2–3 μ.

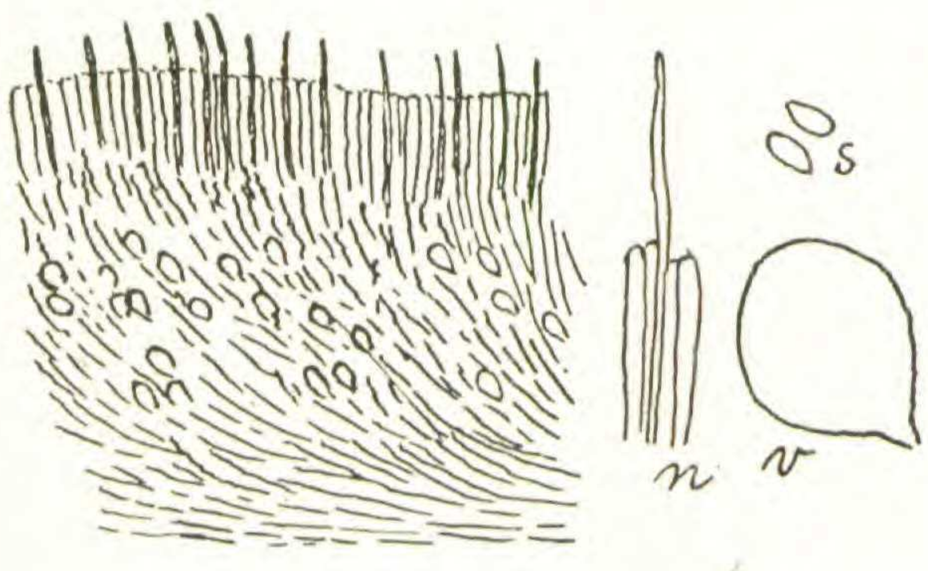


Fig. 14. *S. rugosiusculum.* Section of hymenial region × 90; cystidium and basidia, *n*, vesicular body, *v*, and spores, *s*, × 665.

Resupinate specimens up to 6 cm. in diameter; reflexed portion 1–2 cm. broad, 2–6 cm. laterally along substratum.

On logs and stumps of *Salix* and other frondose species. Ontario to Alabama, in Missouri, and in British Columbia to Mexico; occurs also in Sweden, France, Italy, England, and Japan. August to April.

Stereum rugosiusculum is probably more frequent and more widely distributed than shown by the specimens received, for

the general aspect and microscopic structure of specimens are usually so similar to *S. purpureum* that it is distinguishable from the latter only by the presence of weak flexuous hairs in the hymenium which are not visible until sectional preparations are examined with the compound microscope. Such hymenial hairs were in 1839 figured by Berkeley, *loc. cit.*, in illustrating the hymenium of what he regarded as *Thelephora purpurea* but which now appears to have been *S. rugosiusculum*. All specimens in which these hair-like cystidia have been demonstrated have been either resupinate or with simple, reflexed portion not narrowly lobed or complicate. It has not been possible to observe a specimen throughout its whole season of growth to determine whether the hair-like cystidia are a constant character. In forming the glabrous, rugulose surface upon which the specific name is based, the specimens do not become denuded of their original tomentose covering, for sectional preparations of such specimens, mounted in liquid medium, show this hairy covering to be of the original thickness and with the tips of the hairs no longer adhering together into a plane surface but now floating free. Probably the gluing together of the hairs into a glabrous surface is a weather phenomenon.

Specimens examined:

Exsiccati: *Bartholomew*, Fungi Col., 3489, under the name *Stereum purpureum;* Cavara, Fungi Longobardiae, 60, under the name *Stereum purpureum;* Ellis, N. Am. Fungi, 323, under the name *Stereum purpureum*.

Sweden: Stockholm, *L. Romell, 33*.

England: *M. J. Berkeley*, under the name *Stereum vorticosum* (in Kew Herb.).

France: Fautrey, determined by Patouillard as *S. purpureum*, comm. by Lloyd Herb., 4339, 4363.

Italy: *F. Cavara*, in Cavara, Fungi Longobardiae, 60.

Ontario: London, *J. Dearness*, in Bartholomew, Fungi Col., 3489.

Maine: *Morse*, comm. by Sprague (in Curtis Herb., 5413, type of *Stereum Micheneri* as emended by Massee); Harrison, *J. Blake*, comm. by P. L. Ricker; Piscataquis Co., *W. A. Murrill, 1850, 2153* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56692, 56693).

Vermont: Ripton, *E. A. Burt.*

Massachusetts: *Sprague, 492,* type (in Kew Herb. and Curtis Herb., 5412); Cambridge, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 4774), and *A. B. Seymour, T 19* (in Mo. Bot. Gard. Herb., 43886).

New York: Ithaca, *G. F. Atkinson, K, 2818a;* Lake Placid, *W. A. & E. L. Murrill, 445* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56694); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56268).

New Jersey: *J. B. Ellis,* in Ellis, N. Am. Fungi, 323.

Pennsylvania: *E. Michener, 509,* type of *Corticium Nyssae* (in Curtis Herb., 3486); Ohiopyle, *W. A. Murrill, 1043* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56695); Trexlertown, *W. Herbst.*

Virginia: Blacksburg, *W. A. Murrill, 351* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56710).

Alabama: *Peters, 858,* type of *Corticium siparium* (in Curtis Herb., 5239); Montgomery Co., *R. P. Burke* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56792).

Missouri: Creve Coeur Lake, *E. A. Burt* (in Mo. Bot. Gard. Herb., 13031).

Idaho: Priest River, *J. R. Weir, 595* (in Mo. Bot. Gard. Herb., 36740).

British Columbia: *J. Macoun, 62* (in Mo. Bot. Gard. Herb., 5740).

Washington: Bellingham, *J. R. Weir, 604* (in Mo. Bot. Gard. Herb., 36741); Seattle, *W. A. Murrill, 129, 139, 147,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55743, 55732, 55728); *W. A. Murrill, 136,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55735), and *S. M. Zeller, 129* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 129).

Oregon: Corvallis, *W. A. Murrill, 892a,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55724); Kiger Island, *S. M. Zeller, 1788* (in Mo. Bot. Gard. Herb., 56653).

California: *R. A. Harper, 36* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56697); Sierra Nevada Mts., *Harkness, 1060* (in Herb. Cooke in Kew Herb., under the name *Stereum muscigenum*).

Mexico: Guernavaca, *W. A. & E. L. Murrill, 410, 546, 547* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 54535, 54581, 54582).

Japan: Kushiro, *A. Yasuda, 64* (in Mo. Bot. Gard. Herb., 56136).

35. S. Murrayi (Berk. & Curtis) Burt, n. comb.

Plate 4, figs. 31, 32.

Thelephora Murraii Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 329. 1868; Grevillea **1:** 150. 1873; spelling of specific name changed to *Murrayi* in Sacc. Syll. Fung. **6:** 546. 1888.—*Stereum tuberculosum* Fries, Hym. Eur. 644. 1874; Sacc. Syll. Fung. **6:** 586. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 204. 1890; Romell, Bot. Not. **1895:** 70. 1895.—*S. pulverulentum* Peck, Torr. Bot. Club Bul. **27:** 20. 1900; Sacc. Syll. Fung. **16:** 187. 1902.

Illustrations: Lloyd, Myc. Writ. **5.** Myc. Notes 62: *pl. 148. f. 1690.* 1920.

Type: in Kew Herb. and Curtis Herb.

Fructifications corky, adnate, usually resupinate and broadly effused, sometimes reflexed, the reflexed upper surface a hard, horny crust, not shining, concentrically sulcate, fuscous-black or aniline-black, the margin entire; hymenium drying from pale olive-buff to avellaneous, tubercular, deeply cracking; in structure 300 μ thick at first, then becoming stratose and thickening to 800–2000 μ, composed of densely interwoven, rather suberect hyaline hyphae $2\frac{1}{2}$–4 μ in diameter and of very numerous, hyaline, pyriform vesicular organs 15–20×12–15 μ which are distributed throughout the whole fructification; no colored conducting organs nor cystidia;

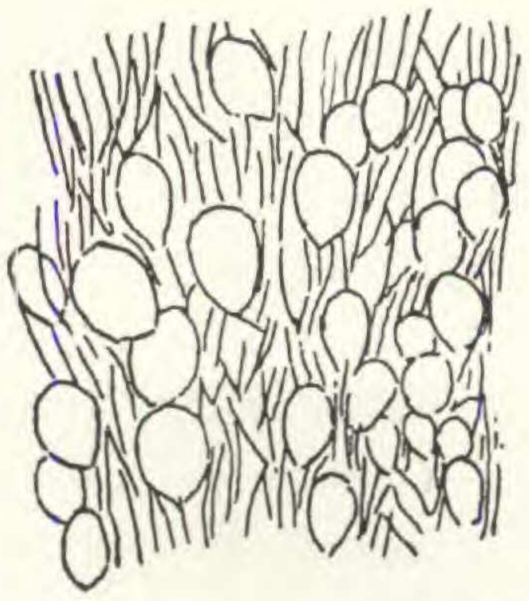


Fig. 15. *S. Murrayi.* Section of hymenial region × 488, showing vesicular bodies.

spores white in spore collection, even, flattened on one side, $4\frac{1}{2}$–5×$2\frac{1}{2}$ μ.

Resupinate specimens 1–10 cm. in diameter, becoming confluent, reflexed part 3–10 mm. broad.

On rotting logs and limbs of frondose species such as *Acer*, *Betula*, *Fagus*, *Quercus*, and *Tilia*. Canada to West Indies and westward to British Columbia. April to October in the north and October to March in the West Indies. Common. Occurs in Scandinavia also.

The specimens upon which were based the original descriptions of *S. Murrayi* and its synonyms were resupinate; in each instance the species was included in *Stereum* or *Thelephora*, although longitudinally arranged hyphae are not present and do not constitute an intermediate layer. The distinguishing characters of the resupinate specimens are their thickness, pallid to pale avellaneous color, tubercular and deeply cracked hymenium, abundance of vesicular organs throughout the whole thickness of the fructification, and occurrence on a frondose substratum. The horny crust forming the upper side of the pileus is similar to that of some species of *Fomes* and is unique among our Stereums, but the reflexed stage is so rare that this character does not often afford help in recognizing the species. The geographical distribution in three widely separated areas is remarkable; it seems probable that the European stations in Norway and Sweden should be regarded as merely outlying stations of a common North American species; it is very strange that a species presumably northern should be well established in Cuba and Jamaica and absent from Florida and the Carolinas, yet specimens from all three isolated regions are identical in aspect and microscopical structure.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 704, under the name *Stereum rugosum;* Ell. & Ev., N. Am. Fungi, 2903, under the name *Corticium colliculosum;* Shear, N. Y. Fungi, 51, under the name *Stereum rugosum*.

Norway: *M. N. Blytt*, type of *Stereum tuberculosum* (in Herb. Fries).

Sweden: Island of Gotland, on *Abies excelsa*, *L. Romell, 135*.

Canada: *J. Macoun, 18, 43, 60;* Billings Bridge, *J. Macoun, 44;* Lower St. Lawrence Valley, *J. Macoun, 69, 72*.

Ontario: *J. Dearness, 1022* (in Mo. Bot. Gard. Herb., 22682); Blackwater, *J. McFarlane*, Univ. Toronto Herb., 330 (in Mo. Bot. Gard. Herb., 44865); Harraby, Lake Rosseau,

E. T. & S. A. Harper, 730; London, *J. Dearness,* two collections, and in Ell. & Ev., Fungi Col., 704; Ottawa, *J. Macoun, 12,* and *676*—the latter comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 56757); Toronto, Algonquin Park and Lorne Park, *J. H. Faull,* Univ. Toronto Herb., 500 and 333 respectively (in Mo. Bot. Gard. Herb., 44854 and 44873).

Maine: *F. L. Harvey,* comm. by P. L. Ricker, and *F. L. Harvey,* type of *Stereum pulverulentum* (in N. Y. State Mus. Herb.) and cotype comm. by P. L. Ricker; Portage, *L. W. Riddle, 19;* Sebec Lake, *W. A. Murrill, 2304* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56755).

New Hampshire: Chocorua, *W. G. Farlow;* Crawford Notch, *L. O. Overholts, 4582* (in Mo. Bot. Gard. Herb., 55640); Groton, *J. Blake,* comm. by P. L. Ricker; Hebron, *P. Wilson* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56756); Shelburne, *W. G. Farlow* (in Farlow Herb.).

Vermont: Bristol, *E. A. Burt;* Grand View Mt., *E. A. Burt,* two collections; Middlebury, *E. A. Burt,* two collections; Ripton, *E. A. Burt,* two collections and also near Abby Pond and Lost Pleiad Lake.

Massachusetts: *Murray,* comm. by Sprague, 546, authentic specimen of *Thelephora Murrayi* (in Curtis Herb., 5809).

New York: Alcove, *C. L. Shear, 1206, 1311,* and in Shear, N. Y. Fungi, 51; Altamont, *E. A. Burt;* Floodwood, *E. A. Burt;* Fulton Center, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56274); Horicon, *C. H. Peck* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 56107); Ithaca, *C. J. Humphrey, 549;* Lake Placid, *W. A. & E. L. Murrill, 194* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56756); North Elba, *C. H. Peck, 1;* Seventh Lake, Adirondack Mts., *B. M. Duggar & F. C. Stewart;* West Ann, *S. H. Burnham, 4* (in Mo. Bot. Gard. Herb., 43997).

West Virginia: Nuttallburg, *L. W. Nuttall,* in Ell. & Ev., Fungi Col., 704.

Michigan: Houghton, *C. H. Kauffman,* comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55812); Sailors' Encampment, *Miss A. O. Stucki, 5;* Vermilion, *A. H. W. Povah, 190* (in Mo. Bot. Gard. Herb., 17615).

Wisconsin: Ladysmith, *C. J. Humphrey, 1914* (in Mo. Bot. Gard. Herb., 42916).
Idaho: Priest River, *J. R. Weir, 362, 379* (in Mo. Bot. Gard. Herb., 16533, 17115).
British Columbia: Agassiz, *J. R. Weir, 351* (in Mo. Bot. Gard. Herb., 8066).
Cuba: *C. Wright, 269*, type (in Kew Herb. and Curtis Herb.); Alto Cedro, *Earle & Murrill, 491*, comm. by N. Y. Bot. Gard. Herb.; Ciego de Avila, *Earle & Murrill, 590*, comm. by N. Y. Bot. Gard. Herb.; Herradura, *Earle & Murrill, 188*, comm. by N. Y. Bot. Gard. Herb.
Porto Rico: Rio Piedras, *J. A. Stevenson, 3360* (in Mo. Bot. Gard. Herb., 7584).
Jamaica: Constant Spring Hotel grounds, *W. A. & E. L. Murrill, 34*, comm. by N. Y. Bot. Gard. Herb.; New Haven Gap, *W. A. & E. L. Murrill, 771*, comm. by N. Y. Bot. Gard. Herb.; Port Antonio, *F. S. Earle, 575*, comm. by N. Y. Bot. Gard. Herb.

36. S. saxitas Burt, n. sp. Plate 4, fig. 33.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructification thick, stratose, stony-hard throughout, resupinate, effused, becoming narrowly reflexed, the reflexed portion black above, irregular, stony; hymenium even or tubercular, not shining, drying cartridge-buff to whitish; in structure 1–5 mm. thick, stratose, composed of alternating pale and darker layers but with a horn-like translucent luster throughout when cut; a few vesicular organs 20–25×12–15 μ present along the under portion of each stratum; no cystidia; spores hyaline, even, 4–5×3–4 μ.

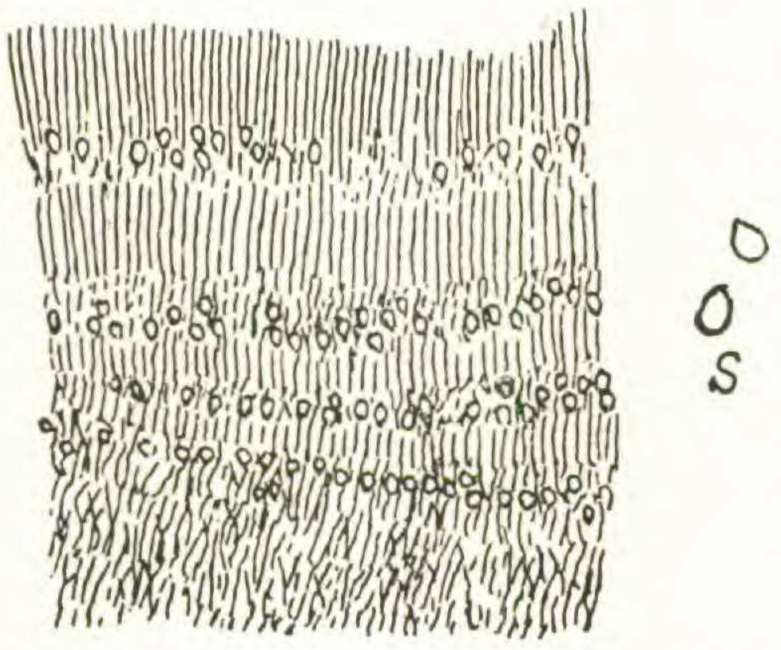


Fig. 16. *S. saxitas*. Section of hymenial region × 90, showing vesicular bodies; spores, *s*, × 665.

Resupinate portion 3–6 cm. in diameter; reflexed margin 2–4 mm. broad.

On bark of apparently a frondose species. Mexico and Jamaica. December and May.

S. saxitas resembles in aspect *S. Murrayi*, and relationship to this species is further shown by the presence of vesicular organs; however, it is thicker than *S. Murrayi*, stony-hard throughout, contains but few vesicular cells, and has subglobose spores. Its structure is so extremely hard that it has been possible to cut sections for microscopic details of only the hymenium and nearly adjacent regions even after prolonged soaking in water.

Specimens examined:

Mexico: Guernavaca, *W. A. & E. L. Murrill, 419*, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54552).

Jamaica: John Crow Peak, *D. S. Johnson* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 56758, and Burt Herb.).

37. S. styracifluum Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 105. 1822 (under *B. Sterea* of *Thelephora*); Fries, Epicr. 549. 1838; Sacc. Syll. Fung. **6**: 569. 1888.

Plate 4, figs. 34, 35.

Thelephora styraciflua Schweinitz in Fries, Elenchus Fung. **1**: 177. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.

Type: in Herb. Schweinitz and portions in Herb. Fries and Curtis Herb.

Fructification coriaceous, resupinate and effused, with a narrow, free marginal portion, or slightly reflexed, tomentose, drying pinkish buff to cinnamon-buff; hymenium dull, pruinose, not multizonate, drying pinkish buff, exuding a yellow milk when compressed and becoming dark-discolored, contracting in drying and splitting; in structure 700–800 μ thick, with the intermediate layer bordered on its upper side by a pale golden zone not denser than the rest of the layer, composed of very densely arranged hyphae $2\frac{1}{2}$–3 μ in diameter, with pale-colored conducting organs 3–$3\frac{1}{2}$ μ in diameter which curve into the hymenium; no cystidia; spores hyaline, even, slightly curved, 5–8×$2\frac{1}{2}$–3 μ.

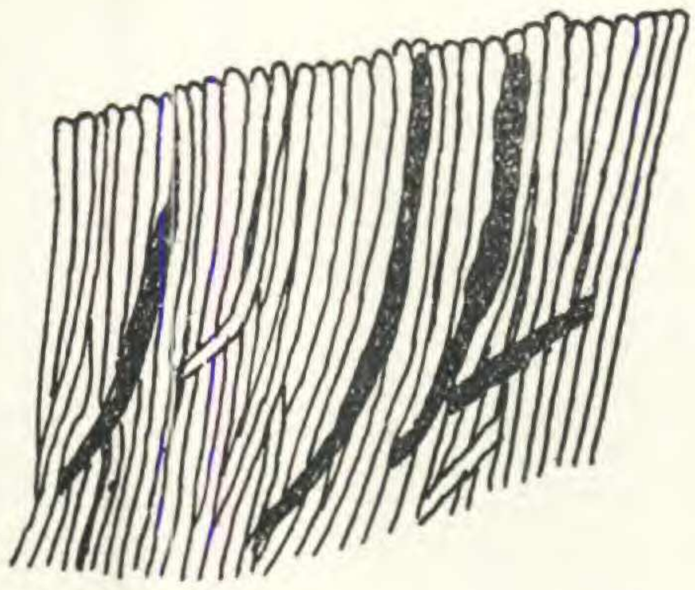


Fig. 17. *S. styracifluum*. Section of hymenial region × 488, showing conducting organs. From type.

Resupinate portion 3×2 cm.; the free margin up to 5 mm. broad.

On under side of dead, fallen limbs of *Liquidambar* and mossy dead trunk of *Carpinus*. North Carolina and Alabama. January. Rare.

S. styracifluum is intermediate between *S. rameale* and *S. rugosum;* in the region where it occurs it is likely to be regarded as a resupinate form of *S. rameale*, from which it differs in darker and more irregular hymenial surface, greater thickness of fructification, margin sometimes with a black edge, and reflexed part tomentose to the margin; the pale-colored conducting organs are similar in the two species but rather more abundant in *S. styracifluum*. The general aspect is so similar to that of *S. rugosum*, very common in Europe, that the yellow milk of *S. styracifluum* was properly regarded by Schweinitz as an important distinctive character of the American species; other differences are that the intermediate layer is much broader and denser than that of *S. rugosum*, that the hymenium is only 20–30 μ broad, never zonate, and that the conducting organs are much less numerous and paler than in *S. rugosum*.

Specimens examined:

North Carolina: Salem, *Schweinitz*, type (in Schweinitz Herb., Fries Herb., and Curtis Herb.).

Alabama: Auburn, on *Carpinus*, *F. S. Earle & C. F. Baker* (in Burt Herb. and Mo. Bot. Gard. Herb., 5061).

38. S. gausapatum Fries, Hym. Eur. 638. 1874; Sacc. Syll. Fung. **6:** 560. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 180. 1890. Plate 4, fig. 36.

Thelephora gausapata Fries, Elenchus Fung. **1:** 171. 1828; Epicr. 538. 1838.—*T. spadicea* Fries, Elenchus Fung. **1:** 176. 1828 (not *T. spadicea* Persoon, Syn. Fung. 568. 1801. See Bresadola, I. R. Accad. Agiati Atti III. **3:** 106. 1897).—*Stereum spadiceum* Fries, Epicr. 549. 1838; Hym. Eur. 640. 1874; Berkeley, Outlines Brit. Fung. 270. 1860; also of more recent English authors.—*S. spadiceum* var. *plicatum* Peck, N. Y. State Mus. Rept. **50:** 132. 1897.—*S. cristulatum* Quelet, Champ. Jura et Vosges **3:** 15. *pl. 1. f. 15.* 1875.—*S. occidentale* Lloyd, Myc. Writ. **5.** Letter 69:12. 1919.

Type: specimen from Fries in Kew Herb.

Fructifications coriaceous, effuso-reflexed or somewhat dimidiate, usually cespitose-imbricated, confluent, varying from villose to hirsute, buckthorn-brown, more or less radially plicate; hymenium bleeding when fresh if cut or bruised, drying snuff-brown and more or less darker discolored; in structure 600–700 μ thick exclusive of the hairy covering, composed of densely and longitudinally arranged hyphae, with flexuous, colored conducting organs 75–120×5 μ, very numerous in the hymenium; no cystidia; spores hyaline, even, 5–8×$2\frac{1}{2}$–$3\frac{1}{2}$ μ.

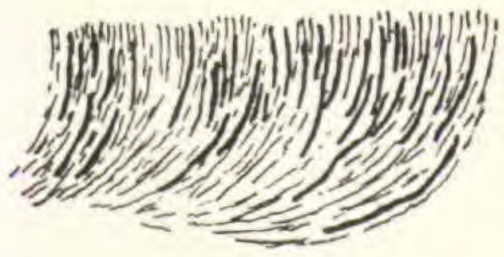


Fig. 18. *S. gausapatum.* Section of hymenial region × 68, showing distribution of conducting organs.

Singly or covering areas up to 10 cm. and more in diameter; reflexed portion about 1 cm. broad, 1–$2\frac{1}{2}$ cm. long or more, or with small pilei or lobes 1–$1\frac{1}{2}$ cm. in diameter.

On stumps of *Quercus* usually. Canada to Alabama and westward to Washington and California. August to March. Common.

S. gausapatum is usually recognizable at sight by its clustered fructifications tobacco-colored above and clothed with a heavy villose or strigose coat, by the rather dark hymenium which bleeds when cut and becomes somewhat darker discolored in drying, and by the occurrence on oak. Sectional preparations show very numerous, colored conducting organs in the hymenium. *S. australe* of the Gulf states bleeds and has colored conducting organs, although fewer, but its fructifications do not form dense clusters and are not radially plicate. *S. sanguinolentum* has the same geographical distribution as *S. gausapatum* and bleeds when fresh and has colored conducting organs, but has small fructifications occurring on conifers only. The hairy covering of the pileus is greedily devoured by herbarium insects, leaving the pilei bare of their normal covering if specimens are not protected against their depredations, but, except for insect depredation, this covering is a persistent character.

Fries described the effuso-reflexed stage of *S. gausapatum* under the name *T. spadicea*, confusing this stage with the more southern and specifically different *Thelephora spadicea* of Persoon, which does not occur in America. It seems preferable

to use the name *S. gausapatum* for our species, although unfortunately the other name is in general use in England, and leave the name *S. spadiceum* available for use in its original sense as continental mycologists do. It is surprising that specimens of *S. gausapatum* do not occur in Herb. Schweinitz under some name or other.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2883, 4292; Berkeley, Brit. Fungi, 144; Cooke, Fungi Brit., 107; Ellis, N. Am. Fungi, 325; Ell. & Ev., N. Am. Fungi, 3413, under name *Stereum hirsutum;* Ell. & Ev., Fungi Col., 218; Ravenel, Fungi Car. **2:** 32; Fungi Am., 447; Romell, Fungi Scand. Exs., 28, 122.

Sweden: Stockholm, *L. Romell, 45, 46, 238,* and in Romell, Fungi Scand. Exs., 28, 122.

England: *M. J. Berkeley,* in Berkeley, Brit. Fungi, 144; Epping, *M. C. Cooke,* in Cooke, Fungi Brit., 107.

Holland: Amsterdam, *C. A. J. A. Oudemans,* in Oudemans, Fungi Neerland., 239 (in Mo. Bot. Gard. Herb.).

France: authentic specimen of *Stereum cristulatum* from Quelet (in Herb. Fries); wall of German trench, *Lieut. G. W. Martin,* comm. by P. J. Anderson, 3 (in Mo. Bot. Gard. Herb., 55848); St. Sernin, Aveyron, *A. Galzin, 1265,* comm. by H. Bourdot, 16234; Corrombles, *F. Fautrey,* from Lloyd Herb., 3312.

Italy: Trentino, *G. Bresadola.*

Canada: Carleton Place, *J. Macoun, 419.*

Ontario: Lake Joseph, *T. Langton,* Univ. Toronto Herb., 590 (in Mo. Bot. Gard. Herb., 44846); London, *J. Dearness;* Swansea, *J. H. Faull,* Univ. Toronto Herb., 375 (in Mo. Bot. Gard. Herb., 44931); Toronto, *J. H. Faull, G. H. Graham, T. Langton, R. P. Wodehouse,* Univ. Toronto Herb., 372, 376, 676, 679, 591, 597, 368 (in Mo. Bot. Gard. Herb., 44946, 44932, 44923, 44935, 44849, 44840, 44855, respectively).

Vermont: Lake Dunmore, *E. A. Burt,* three collections; Middlebury, *E. A. Burt.*

Massachusetts: Mt. Auburn, *E. A. Burt;* Stoneham, *C. L. Shear, 1233;* Wayland, *A. B. Seymour, T36* (in Mo. Bot.

Gard. Herb., 13939); Waverly, *G. R. Lyman, 121;* Weston, *A. B. Seymour, T10* (in Mo. Bot. Gard. Herb., 19621).

Connecticut: West Hartford, *C. C. Hanmer, 2670* (in Mo. Bot. Gard. Herb., 42605).

New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5046, 5102); Cold Spring Harbor, *H. J. Banker* (in Mo. Bot. Gard. Herb., 54434); Green Lake, *P. Wilson, 52* (in Mo. Bot. Gard. Herb., 54745); Ithaca, *G. F. Atkinson, 223 O. S., 2140, 7986, 7986b, H. H., 5088, C. J. Humphrey, F. A. Wolf, 22943;* N. Greenbush, *C. H. Peck,* in Ellis, N. Am. Fungi, 325; Poughkeepsie, *W. R. Gerard, 271* (in N. Y. Bot. Gard. Herb.); Shakers, *S. H. Burnham, 16* (in Mo. Bot. Gard. Herb., 44010); St. Regis Falls, *L. A. Zimm, 94* (in Mo. Bot. Gard. Herb., 21941); Williamsbridge, *P. Wilson, 2* (in Mo. Bot. Gard. Herb., 54746); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56700).

New Jersey: Newfield, *J. B. Ellis,* in Ell. & Ev., Fungi Col., 218.

Pennsylvania: Kittanning, *D. R. Sumstine, 5, 6, 8;* Spruce Creek, *J. H. Faull,* Univ. Toronto Herb., 371, 672 (in Mo. Bot. Gard. Herb., 44925, 44938); Trexlertown, *C. G. Lloyd, 0054.*

Delaware: Newark, *H. S. Jackson.*

Maryland: Takoma Park, *C. L. Shear, 1018, 1201, 1270, 1273.*

Virginia: Clarendon, *W. H. Long, 12617* (in Mo. Bot. Gard. Herb., 55103); Park Lane, *W. H. Long, 12860* (in Mo. Bot. Gard. Herb., 55109).

North Carolina: Biltmore, *C. Harrison,* comm. by P. L. Ricker, *E. Bartholomew, 5663* (in Mo. Bot. Gard. Herb., 44262); Blowing Rock, *G. F. Atkinson, 4318, 4328;* Chapel Hill, *W. C. Coker, 334, 3821* (in Mo. Bot. Gard. Herb., 56670, 56671).

South Carolina: Aiken, *H. W. Ravenel,* in Ravenel, Fungi Am., 447; Black Oak, *H. W. Ravenel,* in Ravenel, Fungi Car. **2**: 32.

Georgia: Tallulah Falls, *A. B. Seymour,* comm. by W. G. Farlow, C. C. (in Mo. Bot. Gard. Herb., 44604).

Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56287, 56703), and *C. F. Baker,*

50 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56702); Montgomery Co., *R. P. Burke, 24, 38* (in Mo. Bot. Gard. Herb., 17651, 4925).

Louisiana: St. Martinville, *A. B. Langlois, 165.*

Michigan: *Beal, 57*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55810); Ann Arbor, *C. H. Kauffman, 37* (in Mo. Bot. Gard. Herb., 18995); Glen Lake, *C. G. Lloyd, 02551.*

Ohio: Cincinnati, *C. G. Lloyd, 02820*; College Hill, *W. Holden*, comm. by Lloyd Herb.

Indiana: Millers, *E. T. & S. A. Harper, 678.*

Illinois: River Forest, *E. T. & S. A. Harper, 708;* Riverside, *E. T. & S. A. Harper, 686.*

West Virginia: Nuttallburg, *L. W. Nuttall*, in Ell. & Ev., N. Am. Fungi, 3413.

Kentucky: *S. A. Price* (in Mo. Bot. Gard. Herb., 5136).

Wisconsin: Madison, *E. T. & S. A. Harper, 942, Miss A. D. Stucki, 32*, and *W. Trelease, 84* (in Mo. Bot. Gard. Herb., 5101).

Iowa: Webster Co., *O. M. Oleson, 2, 3, 5.*

Missouri: Columbia, *B. M. Duggar, 358, 392, 573;* St. Louis, *C. R. Ball & H. H. Hume*, and *E. A. Burt* (in Mo. Bot. Gard. Herb., 5023, 21989).

Arkansas: Fayetteville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2883; Womble, *W. H. Long, 19849 in part* (in Mo. Bot. Gard. Herb., 20271).

Texas: Joaquin, *E. Bartholomew*, in Bartholomew, Fungi Col., 4292.

Nebraska: Lincoln, *C. L. Shear, 1017;* Roco, *C. L. Shear, 1012.*

Kansas: Bourbon Co., *A. G. Garrett, 86, 129.*

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir, 502* (in Mo. Bot. Gard. Herb., 21630).

Washington: Seattle, *S. M. Zeller, 109* (in Mo. Bot. Gard. Herb., 44142); *T. C. Frye, 2007* (in N. Y. Bot. Gard. Herb.); Whidley Is., *N. L. Gardner*, Univ. Calif. Herb., 1033 (in Mo. Bot. Gard. Herb., 44151).

Oregon: Corvallis, *C. E. Owens, 2085* (in Mo. Bot. Gard. Herb., 44247), *W. A. Murrill, 903*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55720); Portland, *J. R. Weir, 396* (in Mo. Bot. Gard. Herb., 14094).

California: *I. M. Johnston*, comm. by C. G. Lloyd, part of type of *Stereum occidentale* (in Mo. Bot. Gard. Herb., 56762); Alameda Co., *L. S. Smith*, Univ. Calif. Herb., 403 (in Mo. Bot. Gard. Herb., 44150); Preston's Ravine, Palo Alto, *W. A. Murrill & L. S. Abrams, 1190*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55711); Redwood Park, *W. H. Long, 12604* (in Mo. Bot. Gard. Herb., 55100); Santa Barbara, *O. M. Oleson, 7, 15.*
Arizona: C. G. Pringle, comm. by W. G. Farlow.
Mexico: San Luis Potosi, comm. by U. S. Dept. Agr. Herb.

39. S. australe Lloyd, Myc. Writ. **4.** Letter 48: 10. 1913; and *ibid.* Letter 60: 15. 1916. Plate 4, fig. 37.

An *Thelephora mytilina* Fries, Elenchus Fung. **1**: 175. 1828?

Type: in Lloyd Herb. and Mo. Bot. Gard. Herb.

Fructification coriaceous, attached by the resupinate side and umbo, broadly reflexed, sometimes laterally confluent, densely tomentose, becoming concentrically furrowed and very rarely glabrous and showing the shining chestnut surface of the pileus in one or more of the furrows, the margin entire, sometimes becoming blackish; hymenium even, glabrous, drab-gray to avellaneous, becoming red-discolored where cut or bruised, and sometimes bleeding; in structure 900 μ thick, composed of densely, longitudinally arranged hyphae, among which are a few colored conducting organs $3\frac{1}{2}$–$4\frac{1}{2}$ μ in diameter which curve into the hymenium between the basidia; no cystidia nor gloeocystidia present; spores hyaline, even, flattened on one side, 4–$4\frac{1}{2}\times 2\frac{1}{2}$–3 μ, few found.

Fructifications with resupinate portion 1–3 cm. broad, reflexed portion 1–4 cm. broad, 1–5 cm. long and sometimes more by lateral confluence.

On hardwood logs. Florida and Mississippi to Brazil. August to December in the north and in July in Brazil. Apparently rare.

Stereum australe combines the characters of *S. fasciatum* and *S. gausapatum*. Its general aspect resembles that of specimens of *S. fasciatum* in a middle period of development when they are effuso-reflexed and have the umbo developed, but the specimens of *S. australe* have a broader resupinate portion than those of *S.*

fasciatum and are not wedge-shaped and attached merely by the umbo in any specimens which I have seen; the bleeding or red-discoloration of the hymenium when cut or bruised and the presence of colored conducting organs are additional characters which separate *S. australe* from *S. fasciatum*. *S. australe* may be distinguished from *S. gausapatum* by not having its reflexed portion crisped nor consisting of small pilei which stand out near together and in imbricate arrangement from a common resupinate portion.

In case of the collection from Mississippi, it was noted that the substratum was badly sap-rotted.

If original specimens of *Thelephora mytilina*, collected by Lund in Brazil, are still in existence, I believe that they will be found cospecific with *S. australe*. The geographical range of *S. australe* and the description of *T. mytilina* favor this belief. Fries's description was probably based on dried specimens, and it does not mention bleeding of the hymenium nor such a microscopical character as colored conducting organs, for such a microscopic detail was not noted in those days, but the blackening of the edge of the pileus which was observed by Fries is an indication of a bleeding hymenium and colored conducting organs.

Specimens examined:

Florida: type comm. by C. G. Lloyd (in Mo. Bot. Gard. Herb., 56608); Kissimme, *C. J. Humphrey, 3532* (in Mo. Bot. Gard. Herb., 3370).

Mississippi: Laurel, *C. J. Humphrey, 5434*.

Mexico: Jalapa, *W. A. & E. L. Murrill, 189*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54446).

Canal Zone: Gatun, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56707).

Grenada: *W. E. Broadway* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56625, 56626).

Venezuela: Caracas, *Mr. & Mrs. J. N. Rose, 22038* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56657).

Brazil: Rio de Janeiro, *J. N. Rose & P. G. Russell, 21480* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56627).

40. S. rugosum Persoon, Roemer Neues Mag. Bot. **1**: 110. 1794; Fries, Epicr. 552. 1838; Myc. Eur. 643. 1874; Berk-

eley, Brit. Fungi, 271. 1860; Sacc. Syll. Fung. **6**: 572. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 191. 1890.

Plate 4, figs. 38, 39.

Thelephora rugosa Persoon, Syn. Fung. 569. 1801; Myc. Eur. **1**: 127. 1822; Albertini & Schweinitz, Consp. Fung. 274. 1805; Fries, Syst. Myc. **1**: 439. 1821; Elenchus Fung. **1**: 177. 1828.

Illustrations: Istvanffi, Jahrbuch. f. wiss. Bot. **29**: *pl. 4. f. 11; pl. 5. f. 19.*

Fructifications coriaceous-corky, usually resupinate and effused, with a narrow, free, marginal portion, or sometimes reflexed, silky at first and pinkish buff, at length concentrically furrowed, radially pitted and weathering gray, the margin thick, entire; hymenium dull, pruinose, drying pinkish buff to drab-gray, when fresh bleeding where wounded; in structure 500–1800 μ thick, with the intermediate layer bordered on the upper side by a dense golden zone and on the lower side by a two- to many-zoned hymenial layer 120–1200 μ thick, hyphae of intermediate layer $2\frac{1}{2}$–3 μ in diameter; dark-colored conducting organs very numerous, 3–6 μ in diameter; no cystidia; spores hyaline, even, flattened on one side, 7–10×3–4 μ.

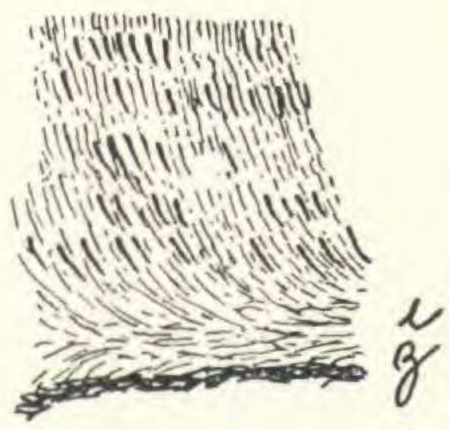


Fig. 19. *S. rugosum.* Section × 19; intermediate layer, *i;* dense golden zone, *z;* the scattered darker lines in hymenial zones show distribution of conducting organs.

Resupinate on areas 2–6 cm. in diameter; free or reflexed margin 2–12 mm. broad.

On stumps of *Alnus*, *Corylus*, *Quercus*, *Betula*, and other frondose species. Newfoundland, Ontario, New York, and mountains of North Carolina. July to October. Rare in North America, common in Europe.

Although usually resupinate and likely to be regarded as a *Corticium* by collectors, nevertheless sectional preparations show the highly developed characteristic structure of a *Stereum*, with intermediate layer of longitudinally arranged hyphae, golden crust, etc. The bleeding of the hymenium and the abundant colored conducting organs locate the species among the Stereums in the group with *S. gausapatum*, *S. australe*, and *S.*

sanguinolentum, from each of which *S. rugosum* is sharply distinct by its two- to several-zoned hymenium—a character by which the species is also separable in dried herbarium condition from *S. styracifluum* when no observations have been recorded as to the color of the milk of specimens in fresh condition.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 145; Krieger, Fungi Sax., 1853, 1853b; Rabenhorst, Herb. Myc., 503; Romell, Fungi Scand. Exs., 30; de Thümen, Myc. Univ., 1009.—All specimens distributed as *S. rugosum* in American exsiccati were misdetermined.

England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 145; Epping Forest, *E. A. Burt;* Kew Garden, *G. Massee.*

Sweden: *L. Romell, 40–42;* Femsjö, *E. A. Burt;* Stockholm, *L. Romell*, in Romell, Fungi Scand. Exs., 30; Upsala, *E. P. Fries* (in Curtis Herb.).

Finland: Mustiala, *P. A. Karsten*, in de Thümen, Myc. Univ., 1007.

Germany: Dresden, in Rabenhorst, Herb. Myc., 503; Saxony, Uttewalder Grunde, *W. Krieger*, in Krieger, Fungi Sax., 1853, 1853b.

Hungary: Tatra Magna, Löcse, *V. Greschik*, comm. by G. Bresadola.

Italy: Trentino, *G. Bresadola*, two collections.

France: Allier, St. Priest, *H. Bourdot, 15023.*

Newfoundland: Bay of Islands, *A. C. Waghorne, 160* (in Mo. Bot. Gard. Herb., 5096); Trinity Bay, *A. C. Waghorne, 1* (in Mo. Bot. Gard. Herb., 5098).

Quebec: Gaspé, *J. Macoun*, and *254* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 56094).

Ontario: Ottawa, *J. Macoun, 38.*

New York: Fall Creek, *G. F. Atkinson, 949.*

North Carolina: Blowing Rock, *G. F. Atkinson, 4189.*

41. S. sanguinolentum Albertini & Schweinitz, Consp. Fung 274. 1805 (under *B. Sterea* of *Thelephora*); Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1:** 106. 1822; Fries, Epicr. 549. 1838; Hym. Eur. 640. 1874; Berkeley, Brit. Fungi, 271. 1860; Sacc. Syll. Fung. **6:** 564. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 189. 1890. Plate 5, fig. 40.

Thelephora sanguinolenta Alb. & Schw. in Fries, Syst. Myc. **1**: 440. 1821; Elenchus Fung. **1**: 178. 1828.—*Stereum balsameum* Peck, N. Y. State Mus. Rept. **27**: 99. 1875; *ibid.* **30**: 75. 1879; Sacc. Syll. Fung. **6**: 584. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 196. 1890.—*S. balsameum* form *reflexum* Peck, N. Y. State Mus. Rept. **47**: 152. 1894.—*S. rigens* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 243. 1882; *ibid.* **48**: 396. 1889; Sacc. Syll. Fung. **11**: 121. 1895.

Illustrations: Gillet, Hymenomycetes; Greville, Crypt. Fl. **4**: *pl. 225;* Istvanffi, Jahrbüch. f. wiss. Bot. **29**: *pl. 4. f. 7–10;* Klotzsch in Dietrich, Fl. Reg. Borussici, *pl. 381;* Nees, Syst. 2nd ed. *pl. 28. f. 1–3;* Patouillard, Tab. Anal. *f. 28.*

Fructifications coriaceous, thin, effused, and reflexed, with upper surface villose to silky and the hairs appressed and somewhat radiately arranged, drying pinkish buff to pale olive-buff, the margin thin; hymenium glabrous, bleeding where wounded, contracting in drying and cracking to the substratum in the resupinate portion, drying avellaneous to wood-brown; in structure 400–600 μ thick, with intermediate layer bordered on the upper side by a narrow, dense golden zone, and composed of densely arranged hyaline hyphae 3 μ in diameter and of colored conducting organs 3–4 μ in diameter which curve into the hymenium and are usually numerous there; no cystidia; spores white in spore collection, even, slightly curved, 6–7$\times 2\frac{1}{2}$ μ.

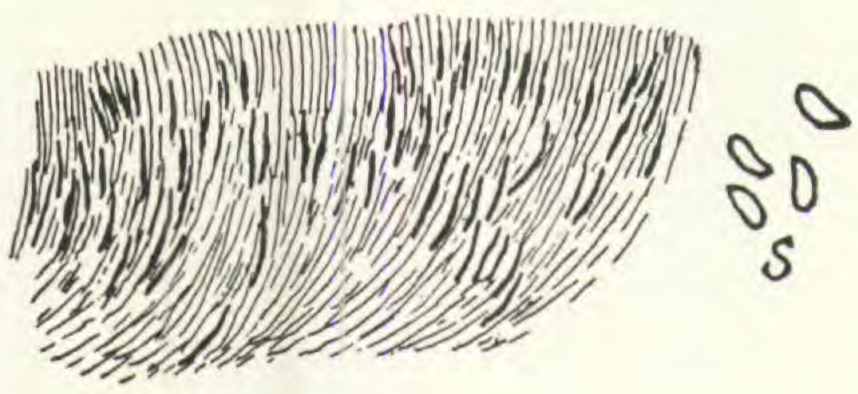


Fig. 20. *S. sanguinolentum.* Section of hymenial region × 68, showing distribution of conducting organs; spores, *s*, × 488.

Resupinate portions 1–5 cm. in diameter, reflexed margins 2–10 mm. broad.

On stumps and logs of *Pinus*, *Abies*, and *Tsuga*. Ontario to Pennsylvania and westward to British Columbia and California. July to March. Frequent.

S. sanguinolentum is commonly resupinate or barely reflexed, so that it is best recognized by its occurrence on conifers and bleeding of the hymenium where wounded, or becoming merely red-discolored along the edges of the wound if the wound is

made during dry weather. The somewhat drab color the hymenium assumes in drying and its deep cracks are highly characteristic of dried specimens. Colored conducting organs are abundant in the hymenium and subhymenium and should be demonstrated if other characters leave the determination doubtful.

Specimens examined:

Exsiccati: Krieger, Fungi Sax., 160; Romell, Fungi Scand. Exs., 29; de Thümen, Myc. Univ., 2010, and 2111, under the name *Stereum rigens*.

Sweden: *L. Romell, 43, 44;* Lapland, *L. Romell, 401 bis;* Stockholm, *L. Romell*, in Romell, Fungi Scand. Exs., 29; Upsala, *E. A. Burt.*

Finland: Mustiala, *P. A. Karsten*, in de Thümen, Myc. Univ. 2010, 2111.

France: Allier, *H. Bourdot, 5586, 7591.*

Italy: *G. Bresadola;* Florence, *G. Arcangeli* (in Mo. Bot. Gard. Herb., 44565).

Newfoundland: Bay of Islands, *A. C. Waghorne, 337, 350*, the latter determined by Peck as *S. balsameum* (in Mo. Bot. Gard. Herb., 5099, 5056).

Canada: comm. by J. B. Ellis, 5070 (in Kew Herb., under the name *Stereum triste* as determined by Cooke).

Quebec: Montreal, *R. J. Blair*, comm. by L. O. Overholts, 3787, 4107 (in Mo. Bot. Gard. Herb., 55097, 55638).

Ontario: Bond Lake, *J. H. Faull*, Univ. Toronto Herb., 320 (in Mo. Bot. Gard. Herb., 44875); Casselman, *J. Macoun, 359;* Lake Nipegon, *J. Macoun, 103;* Ottawa, *J. Macoun, 11;* Toronto, *R. P. Wodehouse*, Univ. Toronto Herb., 369 (in Mo. Bot. Gard. Herb., 44850); York Mills, *J. H. Faull*, Univ. Toronto Herb., 318 (in Mo. Bot. Gard. Herb., 44877).

Maine: Piscataquis Co., *W. A. Murrill, 2029* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56705); Portage, *L. W. Riddle, 18.*

New Hampshire: Chocorua, *W. G. Farlow, 4;* Tuckerman's Ravine, Mt. Washington, *L. O. Overholts, 4949* (in Mo. Bot. Gard. Herb., 56343).

Vermont: Little Notch, Middlebury, and Ripton, *E. A. Burt.*

Massachusetts: *R. J. Blair, 327*, comm. by L. O. Overholts,

4118 (in Mo. Bot. Gard. Herb., 55641), and *D. W. Weis*, comm. by C. G. Lloyd, 129 (in Mo. Bot. Gard. Herb., 56708).

New York: Adirondack Mts., *C. H. Peck*, type of *Stereum balsameum* (in N. Y. State Mus. Herb.); Alcove, *C. L. Shear*, *1136;* Cayuga Lake Basin, *G. F. Atkinson, f, 3028, 8271*, and *H. Hasselbring, 3408;* Glasco, *P. Wilson, 38* (in Mo. Bot. Gard. Herb., 54743); Ithaca, *C. J. Humphrey, 305.*

Pennsylvania: Shingleton Gap, *A. S. Rhoads, 9* (in Mo. Bot. Gard. Herb., 44086).

North Carolina: Salem, *Schweinitz* (in Herb. Schweinitz).

Michigan: Gogebic Co., *E. A. Bessey, 224* (in Mo. Bot. Gard. Herb., 56563).

Montana: Anaconda, *J. R. Weir, 11973* (in Mo. Bot. Gard. Herb., 56727); Elkhorn, *J. R. Weir, 9749* (in Mo. Bot. Gard. Herb., 56224); Evaro, *J. R. Weir, 413* (in Mo. Bot. Gard. Herb., 14773).

Colorado: Ouray, *C. L. Shear, 1186.*

New Mexico: Sandia Mts., *W. H. Long, 21576, 21597* (in Mo. Bot. Gard. Herb., 55154, 55116); Tyorn Experiment Station, *W. H. Long, 21554* (in Mo. Bot. Gard. Herb., 55115).

Idaho: Priest River, *J. R. Weir, 47, 347* (the latter in Mo. Bot. Gard. Herb., 9989); Sandpoint, *E. E. Hubert*, comm. by J. R. Weir, 11612 (in Mo. Bot. Gard. Herb., 56726).

British Columbia: Agassiz, *J. R. Weir, 387* (in Mo. Bot. Gard. Herb., 20887); Hastings, *J. Macoun, 27;* Kootenai Mts., near Salmo, *J. R. Weir, 507* (in Mo. Bot. Gard. Herb., 22700); Sidney, *J. Macoun, 411* (in Mo. Bot. Gard. Herb., 55311).

Washington: Bingen, *W. N. Suksdorf, 871;* Falcon Valley, *W. N. Suksdorf, 723;* Hoquiom, *C. J. Humphrey, 6383;* Olympia, *C. J. Humphrey, 6306;* Renton, *C. J. Humphrey, 6439.*

California: Muir Woods, *W. A. Murrill, 1153* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55705); Olema, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56590); Sutro Woods, *R. A. Harper* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56704).

Arizona: Coronada Nat. Forest, Santa Catalina Mts., *G. G.*

Hedgcock & W. H. Long, comm. by C. G. Humphrey, 2561 (in Mo. Bot. Gard. Herb., 9438).

42. S. sulphuratum Berkeley & Ravenel, Linn. Soc. Bot. Jour. **10**: 331. 1868; Grevillea **1**: 163. 1873; Sacc. Syll. Fung. **6**: 566. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 192. 1890. Plate 5, fig. 41.

Stereum ochroleucum Bresadola, Ann. Myc. **1**: 91. 1903. Not *Stereum ochroleucum* Fries, Hym. Eur. 639. 1874, nor *Corticium ochroleucum* Fries, Epicr. 557. 1838.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, stiff, effuso-reflexed, finally umbonate along the line of attachment to the substratum, and lobed, upper surface tomentose-hirsute, concentrically furrowed, "sulphur colored" when fresh, becoming cartridge-buff to gray in the herbarium, the surface not hardened and crust-like under the hairy covering; hymenium even, glabrous, becoming pinkish buff to dirty tilleul-buff in the herbarium; in structure 200–400 μ thick under the hairy covering, with the intermediate layer not differentiated on its upper side into a dense golden zone but hyaline throughout and with the longitudinally arranged hyphae 3–3$\frac{1}{2}$ μ in diameter, curving outward on the upper side to form the hirsute covering and curving downward on the under side to form the hymenium; no colored conducting organs, gloeocystidia, nor cystidia; spores hyaline, even, 6–8×2–3 μ.

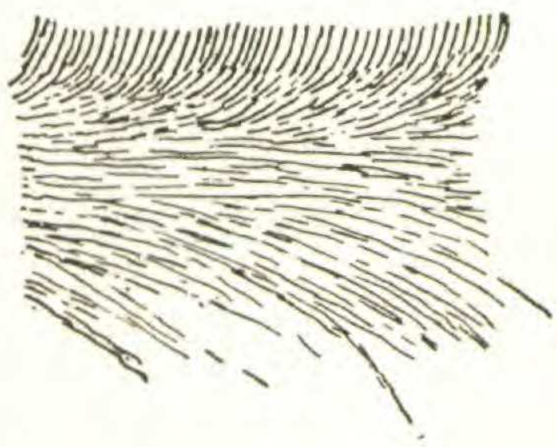


Fig. 21. *S. sulphuratum*. Section of type × 68. The outer border of intermediate layer not a colored, crust-like zone.

Fructifications with resupinate portion $\frac{1}{2}$–2 cm. broad, 10 cm. and more long on under side of limbs; reflexed lobes $\frac{1}{2}$–1$\frac{1}{2}$ cm. broad, $\frac{1}{2}$–2$\frac{1}{2}$ cm. long.

On dead limbs of *Betula* and other frondose species. Georgia to Mexico, West Indies, Venezuela, and Brazil. September to January. Not common.

In growing condition, the sulphur color attributed to specimens of *S. sulphuratum* and the heavy, hirsute covering of the pilei, taken in connection with geographic range wholly south

of that of *S. hirsutum*, should render specimens of the former species easily distinguishable. All gatherings of *S. sulphuratum* which I have seen had already faded to the gray color of old, weathered *S. hirsutum* and in this condition are best distinguished by not having underneath the hairy covering a thin hardened crust as the upper surface of the intermediate layer, nor a dense, somewhat golden zone on the upper border of the intermediate layer when sectional preparations are examined with the microscope.

S. sulphuratum occurs also in Westphalia, Germany, apparently an isolated station, and has been confused there with *Stereum ochroleucum* Fries, a species of thicker and softer structure having hyphae interwoven instead of densely and longitudinally arranged—for which reason Fries was doubtful about its being a true *Stereum* and published the species originally as a *Corticium*. Collections from Sweden and France communicated to me as cospecific with the Westphalian gatherings have the upper surface of the intermediate layers with a crust-like golden zone and are referable to *S. hirsutum* instead.

Specimens examined:

Exsiccati: Brinkmann, Westfälische Pilze, 49, under name of *Stereum ochroleucum;* Rick, Fungi Austro-Am., 260, under name of *Stereum ochroleucum*.

Germany: Westphalia, Lengerich, *W. Brinkmann*, comm. by G. Bresadola, and in Brinkmann, Westfälische Pilze, 49.

Georgia: Catoosa Springs, *H. W. Ravenel* (in Kew Herb. and in Curtis Herb., 1731).

Florida: *C. G. Lloyd, 2131*.

Alabama: Auburn, *Ala. Biol. Surv.*, comm. by F. S. Earle; Montgomery, *R. P. Burke, 4* (in Mo. Bot. Gard. Herb., 22017).

Mexico: Jalapa, *W. A. & E. L. Murrill, 316, 343*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54438, 55477).

Cuba: *C. Wright, 292*, type (in Kew Herb.).

Jamaica: *Farr* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56667); Cinchona, *W. A. & E. L. Murrill, 480, 546*, comm. by N. Y. Bot. Gard. Herb.; Morce's Gap, *W. A. & E. L. Murrill, 723*, comm. by N. Y. Bot. Gard.

Herb.; Monkey Hill, *W. A. & E. L. Murrill, 784*, comm. by N. Y. Bot. Gard. Herb.; Sir John Peak, *L. M. Underwood, 3182* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56668).

Venezuela: *Fendler, 169* (in Curtis Herb.).

Brazil: Sao Leopoldo, *Rick*, in Rick, Fungi Austro-Am., 260.

43. S. hirsutum Willdenow ex Fries, Epicr. 549. 1838; Hym. Eur. 639. 1874; Persoon, Roemer Neues Mag. Bot. **1**: 110. 1794; Obs. Myc. **2**: 90. 1799; Berkeley, Outlines Brit. Fung. 270. *pl. 17. f. 7.* 1860; Sacc. Syll. Fung. **6**: 563. 1888.

Plate 5, fig. 42.

Thelephora hirsuta Willdenow, Fl. Berol. Prod. 397. 1787; Fries, Syst. Myc. **1**: 439. 1821; Persoon, Syn. Fung. 570. 1801; Myc. Eur. **1**: 116. 1822.—*Auricularia reflexa* Bulliard, Herb. de la France **1**: 281. *pl. 274.* 1785.—*Thelephora ochracea* Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 106. 1822, but not of Fries.—*T. subzonata* Fries, Elenchus Fung. **1**: 181. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.—*Corticium subzonatum* Fries, Epicr. 557. 1838; Sacc. Syll. Fung. **6**: 608. 1888.—*Stereum variicolor* Lloyd, Myc. Writ. **4**. Letter 53: 10. 1914.

Illustrations: Berkeley, Outl. Brit. Fung. *pl. 17. f. 7;* Bolton, Hist. Fung. *pl. 82;* Bulliard, Herb. de la France, *pl. 274;* Hussey, Ill. Brit. Myc. **1**: *pl. 58;* Sowerby, Col. Figs. Brit. Fung. *pl. 27;* Stevenson, Brit. Fungi **2**: 267. *text f. 86.* See Sacc. Syll. Fung. **20**: 890, for reference to other illustrations.

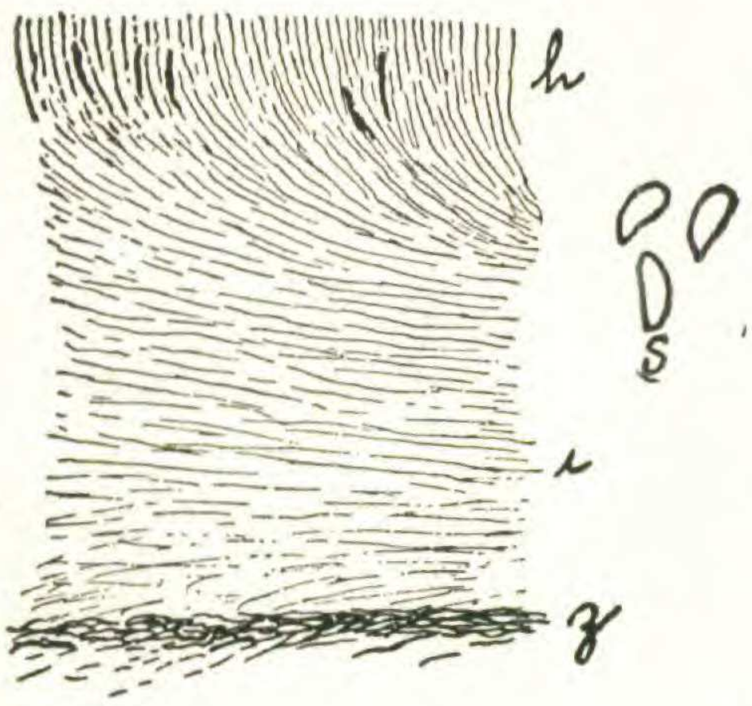


Fig. 22. *S. hirsutum.* Section × 68; intermediate layer, *i;* golden, crust-like zone, *z;* hymenium containing very few conducting organs, *h;* spores, *s*, × 488.

Fructifications coriaceous, stiff, effuso-reflexed, rarely wholly resupinate, strigose-hirsute, somewhat concentrically furrowed, not complicate, cream-buff at first, becoming grayish when old and weathered, with a thin, hardened, crust-like surface bearing the hairy covering, the margin entire;

hymenium even, warm buff at first, sometimes becoming pale smoke-gray, unchanged when cut or bruised; in structure 500–700 μ thick under the hairy covering, with the intermediate layer bordered next to the hairy covering by a very dense, narrow, golden zone, the rest of the intermediate layer composed of densely and longitudinally arranged hyaline hyphae 3–4 μ in diameter, some of which in the subhymenium are thick-walled, up to 5–6 μ in diameter, and very rarely have golden-brown contents as seen between the basidia; no colored conducting organs, cystidia, nor gloeocystidia; spores white in spore collection, even, flattened on one side, $5–7\frac{1}{2}\times2–2\frac{3}{4}$ μ.

Reflexed portion varying from barely reflexed up to 2 cm. broad, 1–2 cm. long; fructifications merely gregarious or confluent, and imbricated.

On logs and stumps of birch, beech, and other frondose species. Newfoundland to South Carolina and westward to British Columbia and California, and in Mexico. July to November in the east and to February in the Pacific states. Common.

Stereum hirsutum is characterized by its strigose-hirsute, buff-colored pileus, weathering more or less gray, and by its warm buff hymenium, sometimes smoke-gray, which does not exude a red juice when wounded; as in *S. rameale*, *S. versicolor*, *S. fasciatum*, *S. lobatum*, *S. australe*, and *S. gausapatum*, the upper surface of the intermediate layer is differentiated into a thin, golden, somewhat horny crust from which the hairy covering springs. This golden zone shows well under the microscope, and its presence is a decisive character for separating *S. hirsutum* from the southern *S. sulphuratum*, a species of somewhat similar aspect.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 146; Cavara, Fungi Longobardiae, 61; Cooke, Fungi Brit., 108; Ellis, N. Am. Fungi, 1204; Krieger, Fungi Sax., 118; Rabenhorst, Herb. Myc., 211; Romell, Fungi Scand. Exs., 26.

Sweden: Femsjö, *L. Romell*, two collections, and *E. A. Burt;* Mauritzberg, *W. A. & E. L. Murrill, 4078* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56671); Stockholm, *L. Romell, 30, 401*, and in Romell, Fungi Scand. Exs., 26.

England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 146; Epping, *M. C. Cooke*, in Cooke, Fungi Brit., 108; Kew Gardens, *G. Massee;* Selby, *E. A. Burt.*

France: *Fautrey*, comm. by Lloyd Herb., 3326; Aveyron, *A. Galzin, 8459*, comm. by H. Bourdot, *7813;* St. Priest, Allier, *H. Bourdot, 19770.*

Germany: Nossen, Saxony, *W. Krieger*, in Krieger, Fungi Sax., 118.

Italy: *A. Carestia, 784, 1215*, comm. by G. Bresadola; Pavia, *F. Cavara*, in Cavara, Fungi Longobardiae, 61.

Newfoundland: *A. C. Waghorne, 118* (in Mo. Bot. Gard. Herb., 5082).

Canada: *J. Macoun, 69.*

Ontario: Ottawa, *J. Macoun, 16, 466a;* Port Credit, *J. H. Faull*, Univ. Toronto Herb., 353 (in Mo. Bot. Gard. Herb., 44858); Toronto, *G. H. Graham*, Univ. Toronto Herb., 678 (in Mo. Bot. Gard. Herb., 44919).

Maine: Milo, *W. A. Murrill, 2024* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56682).

New Hampshire: North Conway, *L. O. Overholts, 5009* (in Mo. Bot. Gard. Herb., 56346).

Vermont: Middlebury, *E. A. Burt;* Ripton, *E. A. Burt;* Smugglers Notch, *E. A. Burt*, two gatherings.

Massachusetts: Boston, *L. C. Monahan* (in Mo. Bot. Gard. Herb., 15309); Cambridge, *E. A. Burt;* Mt. Auburn, *E. A. Burt;* Nahant, *A. B. Seymour, T 31* (in Mo. Bot. Gard. Herb., 12954); Waverly, *A. B. Seymour, T 25, T 26* (in Mo. Bot. Gard. Herb., 16364, 18372); Waltham, *A. B. Seymour, T 16* (in Mo. Bot. Gard. Herb., 17912).

Connecticut: Broad Brook, *C. C. Hanmer, 2682* (in Mo. Bot. Gard. Herb., 42606); Mansfield, *P. W. Graff, 13* (in Mo. Bot. Gard. Herb., 44817); Storrs, *P. W. Graff, 29* (in Mo. Bot. Gard. Herb., 44804).

New York: *G. F. Atkinson, 8026*, and *W. H. Wright*, comm. by G. F. Atkinson, 7990; Alcove, *C. L. Shear, 995;* Fall Creek, *W. H. Wright, 7992;* Floodwood, *E. A. Burt.*

Pennsylvania: Spruce Creek, *J. H. Faull*, Univ. Toronto Herb., 337 (in Mo. Bot. Gard. Herb., 44883); West Chester, *Everhart & Haines*, in Ellis, N. Am. Fungi, 1204.

North Carolina: *Schweinitz*, types of *T. ochracea* and *T. subzonata* (in Herb. Schweinitz); Blowing Rock, *G. F. Atkinson, 4308*.

South Carolina: Clemson College, *P. H. Rolfs*.

Michigan: Cadillac, *H. D. House, 1225* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56673); Isle Royale, *Miss A. D. Stucki*, Univ. Wis. Herb., 23; Vermilion, *A. H. W. Povah, 199* (in Mo. Bot. Gard. Herb., 15145).

Indiana: Crawfordsville, *D. Reddick, 5, 7*, and another specimen, comm. by H. H. Whetzel.

West Virginia: Paw Paw, *C. L. Shear, 1173*.

Tennessee: Elkmont, *C. H. Kauffman, 62* (in Mo. Bot. Gard. Herb., 3972).

Wisconsin: Blue Mounds, *Miss A. D. Stucki*, Univ. Wis. Herb., 8, 9; Madison, *Miss A. D. Stucki*, Univ. Wis. Herb., 34, and *W. Trelease, 5, 26* (in Mo. Bot. Gard. Herb., 56683, 56684); Palmyra, *Miss A. D. Stucki*, Univ. Wis. Herb., 33.

Minnesota: Lake Itaska, comm. by E. L. Jensen, 9 (in Mo. Bot. Gard. Herb., 11088).

Missouri: *B. M. Duggar, 95;* Meramec, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5025).

Arkansas: Womble, *W. H. Long, 19844, 19883* (in Mo. Bot. Gard. Herb., 8963, 14651).

Nebraska: Lincoln, *C. L. Shear, 1023*.

Montana: Evaro, *J. R. Weir, 431* (in Mo. Bot. Gard. Herb., 22515); Mystic Lake, *C. L. Shear, 1102*.

Colorado: Steamboat Springs, *E. Bartholomew, 5578* (in Mo. Bot. Gard. Herb., 9185, 44584); Tolland, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56674).

New Mexico: Albuquerque, *W. H. Long, 21153* (in Mo. Bot. Gard. Herb., 55112); Cloudcroft, *F. S. Earle, 495*, comm. by N. Y. Bot. Gard. Herb., and *W. H. Long, 19542* (in Mo. Bot. Gard. Herb., 55111); Tejano Exp. Station, *W. H. Long, 21875, 21894, 21907* (in Mo. Bot. Gard. Herb., 55161–55163); Tyom Exp. Station, *W. H. Long, 21365, 21366, 21426* (in Mo. Bot. Gard. Herb., 55113, 55114, 55160); Ute Park, *P. C. Standley, 14197*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 44953); Weeds,

L. Wymans, comm. by W. H. Long, 12969 (in Mo. Bot. Gard. Herb., 55110).

Idaho: Priest River, *J. R. Weir, 19, 31, 48.*

British Columbia: New Westminster, *A. I. Hill* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56675); Oak Bay, *J. Macoun, 579a* (in Mo. Bot. Gard. Herb., 55310); Sidney, *J. Macoun, 46, 47, 49, 52, 52 bis, 53, 54, 84* (in Mo. Bot. Gard. Herb., 5736, 6674, 6694, 6682, 55361, 6698, 6697, 6704 respectively).

Washington: Bingen, *W. N. Suksdorf, 692, 693, 709, 874, 891, 893, 916, 953*; Kalama, *C. J. Humphrey, 6140*; Chehalis, *C. J. Humphrey, 6254* (in Mo. Bot. Gard. Herb., 16677); Olympia, *C. J. Humphrey, 6310*; Seattle, *S. M. Zeller, 119* (in Mo. Bot. Gard. Herb., 44139); Tacoma, *W. A. Murrill, 127, 142*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55744, 55730).

Oregon: Corvallis, *C. E. Owens, 2036, 2054, 2057, 2084, 2135, 2136, 2139, 2142, 2143* (in Mo. Bot. Gard. Herb., 43872, 43878, 43877, 44249, 44695, 44694, 44693, 44699, 44702 respectively), and *S. M. Zeller, 1814* (in Mo. Bot. Gard. Herb., 56332); Eugene, *C. J. Humphrey, 6050, 6063, 6076* (in Mo. Bot. Gard. Herb., 17175); Mt. Hood, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2569 (in Mo. Bot. Gard. Herb., 16418); Granite Pass, *J. R. Weir, 8680, 8681* (in Mo. Bot. Gard. Herb., 36752, 36753).

California: *R. A. Harper, 8, 109, 141, 143* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56678–56681), and *Miss E. Hyatt*, comm. by C. L. Shear, 1089; Berkeley, *C. J. Humphrey, 5970, 5982, H. A. Lee*, Univ. Calif. Herb., 1015, 1016, 1019, 1021, 1022 (in Mo. Bot. Gard. Herb., 44154–44156, 44152, 44157 respectively), *W. A. Setchell*, Univ. Calif. Herb., 1023, 1024 (in Mo. Bot. Gard. Herb., 44153, 44245), and *G. Courvoisier*, Univ. Calif. Herb., 1025 (in Mo. Bot. Gard. Herb., 44149); Claremont, *D. L. Crawford, D 12*, comm. by L. O. Overholts, 3280 (in Mo. Bot. Gard. Herb., 10479); Coast Range, *C. F. Baker, 82, 101*, comm. by N. Y. Bot. Gard. Herb.; Fair Oaks, *R. A. Harper* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56676); Julian, *E. Bethel, 28272* (in Mo. Bot. Gard. Herb., 55439); North-

brae, *L. S. Smith*, Univ. Calif. Herb., 416 (in Mo. Bot. Gard. Herb., 44148); Muir Woods, *W. A. Murrill, 1133* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55713); Pinehurst, *E. Bethel, 26269, 26274* (in Mo. Bot. Gard. Herb., 55438, 55440); Preston's Ravine, *W. A. Murrill & L. S. Abrams, 1171*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55707); San Francisco, *W. A. Setchell & C. C. Dolier, W. A. Murrill, 1111*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55702); Santa Barbara, *O. M. Oleson, 6, 9, 16*; Santa Cruz, *G. J. Streater* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56677); Sutro Forest, *A. S. Rhoads, 1* (in Mo. Bot. Gard. Herb., 56045).

Mexico: Coyoacan, *Roldan*, comm. by J. R. Weir, 14937, 14999 (in Mo. Bot. Gard. Herb., 56795, 56796).

44. S. fasciatum Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1:** 106. 1832 (under *B. Sterea* of *Thelephora*); Fries, Epicr. 546. 1838 Sacc. Syll. Fung. **6:** 560. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 180. 1890.

Plate 5, figs. 43–45.

Thelephora versicolor β fasciata (Schw.) Fries, Elenchus Fung. **1:** 175. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. **4:** 167. 1832.—*T. ostrea* Blume & Nees, Acad. Leop.-Carol. Nov. Acta **13**[1]**:** 13. *pl. 2.* 1826.—*Stereum ostrea* (Bl. & Nees) Fries, Epicr. 547. 1838; Sacc. Syll. Fung. **6:** 571. 1888; Bresadola, Hedwigia **51:** 321. 1912.—*Thelephora* (*Stereum*) *mollis* Léveillé, Ann. Sci. Nat. Bot. III. **5:** 147. 1846.—*Stereum molle* Léveillé in Sacc. Syll. Fung. **6:** 577. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 175. 1890.—*S. arcticum* Fries, Hym. Eur. 639. 1874.

Type: in Herb. Schweinitz and in Curtis Herb.

Fructifications coriaceous, rigid, in the north at first broadly effuso-reflexed with the resupinate portion narrow, soon umbonate sessile—perhaps so from the first in the tropics—often laterally confluent, sometimes pseudo-stipitate by prolongation

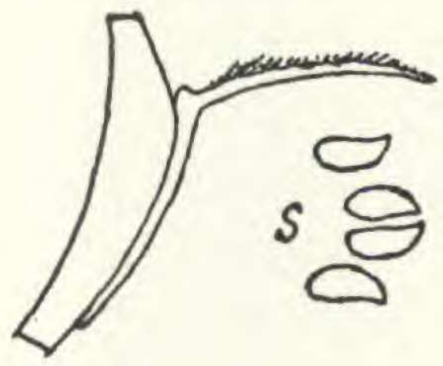


Fig. 23. *S. fasciatum.* Section of reflexed stage, natural size; spores, *s*, × 665.

of the umbo, at first densely tomentose and drying warm buff to tawny olive, at length weathering to pale smoke-gray to neutral gray and sometimes with the tomentum torn apart in narrow zones and showing the hazel or chestnut surface of the bared areas, the margin normally entire; in structure 400–700 μ thick, with the intermediate layer composed of very densely arranged, hyaline hyphae 4 μ in diameter and bordered on the upper side by a broad dark zone which bears the tomentum of the upper surface; hymenium glabrous, usually warm buff to cinnamon-buff, sometimes assuming violaceous tints; no cystidia, gloeocystidia, nor conducting organs; spores from spore collections white, even, flattened on one side, $5\frac{1}{2}$–$7\frac{1}{2} \times 2\frac{1}{2}$–3 μ.

Fructifications 2–7 cm. in diameter, often laterally confluent.

On logs and stumps of *Quercus* and other hardwood species. Common throughout North America from Canada southward, in the West Indies, and in South America; occurs also in Norway, Sweden, Formosa, and Java, although apparently rare in the Old World. In vegetative condition from June onward in the north, persisting throughout the year.

Specimens of *S. fasciatum* may be distinguished from those of the less common *S. lobatum* by the thicker tomentose covering of the former, which may continue unbroken throughout the year or become torn apart so as to show rather few and narrow, bared chestnut zones; the pileus of *S. fasciatum* is thicker than that of *S. lobatum*, and the margin has a lobate tendency but rarely. Towards the northern part of its range where I have observed the development of fructifications throughout the season, the fructifications are at first effuso-reflexed with the resupinate portion up to 1 cm. broad, the reflexed portion $1\frac{1}{2}$ cm. from base to margin, and with a lateral extent along the substratum of 2–8 cm.; umbos soon form at points 1–2 cm. apart along line of intersection of the plane of reflexed portion with the substratum; by further growth outward of the laterally confluent pilei these umbos become the final points of attachment of the pilei with the substratum. In Washington and California the fructifications may continue broadly reflexed when old and are difficult to distinguish from luxuriantly grown *S. hirsutum*.

The specimens from Formosa, cited below, are in the stage in

which the fructifications are still with a resupinate portion but with the umbos distinctly outlined, and exactly agree in all respects, even including spore dimensions, with my Vermont collections of the same stage. The authentic specimen of *Thelephora ostrea* from Java is in the final stage with attachment by umbo only and is clothed over its whole upper surface with a thick coat of tomentum, and matches well most of the specimens of the type collection of *Stereum fasciatum* in Herb. Schweinitz. I infer from the lack of specimens of *S. fasciatum* from the East Indies and the Philippines in published exsiccati, that this species is very rare there and that what frequently has been listed as *S. ostrea* is really the very common *S. concolor* instead.

Schweinitz's original description of *S. fasciatum* presents at such length the disappearance of tomentum from the upper surface of the pileus and the broad, glabrous, shining surface with many vari-colored zones, that it seems probable he may have intended the description to comprehend not only *S. fasciatum* as treated by me but also *S. lobatum*, which he must have seen about him in North Carolina; nevertheless, the ample collection of specimens in Herb. Schweinitz which were preserved as the type of *S. fasciatum* contains no fructifications referable to *S. lobatum*.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2590, under the name *S. versicolor*, 2884, under the name *S. versicolor*, 2985, 3985, 4291, and 4986; Ellis, N. Am. Fungi, 18, under the name *S. versicolor* v. *fasciata*, 514a, and c, both under the name *S. versicolor;* Ell. & Ev., N. Am. Fungi, 1714, under the name *S. purpureum;* Ellis & Ev., Fungi Col., 306, under the name *S. versicolor;* Ravenel, Fungi Am., 220, under the name *S. versicolor*, and 721; Smith, Central Am. Fungi, 145, under the name *S. versicolor;* de Thümen, Myc. Univ., 2011, mixed with *S. lobatum*.

Norway: Bosekon, Finmark, *M. N. Blytt*, type of *Stereum arcticum* (in Herb. Fries).

Sweden: on *Alnus*, North Sweden, comm. by L. Romell, 400.

Canada: *J. Macoun, 12*.

Prince Edward Island: *J. Macoun, 346* (in Macoun Herb.).

Quebec: *J. Macoun, 77, 239, 249, 464* (all in Macoun Herb.)

Ontario: Bond Lake, *J. H. Faull*, Univ. Toronto Herb., 319 (in Mo. Bot. Gard. Herb., 44874); Ottawa, *J. Macoun, 50*; Port Credit, *J. H. Faull*, Univ. Toronto Herb., 352, 354 (in Mo. Bot. Gard. Herb., 44857, 44856); Rondeau Park, *J. H. Faull*, Univ. Toronto Herb., 358 (in Mo. Bot. Gard. Herb., 44870); Toronto, *J. H. Faull*, Univ. Toronto Herb., 356 (in Mo. Bot. Gard. Herb., 44868), *T. Langton*, Univ. Toronto Herb., 501 (in Mo. Bot. Gard. Herb., 44853), *G. H. Graham*, Univ. Toronto Herb., 680 (in Mo. Bot. Gard. Herb., 44937).

Maine: Harrison, *J. Blake*, comm. by P. L. Ricker; Orono, *F. L. Harvey*, comm. by P. L. Ricker; Portage, *L. W. Riddle, 2, 17*.

Vermont: Middlebury, *E. Brainerd, E. A. Burt*, nine collections; Ripton, *E. A. Burt*.

Massachusetts: Amherst, *P. J. Anderson, 2, 4* (in Mo. Bot. Gard. Herb., 55846, 55845 respectively).

Connecticut: Mansfield, *P. W. Graff, 30* (in Mo. Bot. Gard. Herb., 44803); New Haven, *W. A. Setchell;* Norwich, *W. A. Setchell*.

New York: *Sartwell, 19* (in Mo. Bot. Gard. Herb., 5076); Alcove, *C. L. Shear, 1327;* Canandaigua, *L. M. Underwood, 21*, distributed under the name *S. versicolor* (in Mo. Bot. Gard. Herb., 5117); East Galway, *E. A. Burt;* Floodwood, *E. A. Burt;* Freeville, *G. F. Atkinson, 2821;* Glasco, *P. Wilson, 48, 43* (in Mo. Bot. Gard. Herb., 54752, 54754); Grand View, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42811, 43025); Ithaca, *G. F. Atkinson, 2819, 2820, 8027*, Bot. Dept. Cornell Univ., 133 O. S., 2871, *H. S. Jackson*, comm. by Bot. Dept. Cornell Univ., 14397–14399, *Van Hook*, comm. by Bot. Dept. Cornell Univ., 8084, *W. C. Muenscher, 147, 205, 211* (in Mo. Bot. Gard. Herb., 56602–56604); Palisades, *P. Wilson, 20, 18, 12* (in Mo. Bot. Gard. Herb., 54755, 54756, 54759); Yonkers, *P. Wilson, 61* (in Mo. Bot. Gard. Herb., 54753).

New Jersey: Alpine, *P. Wilson, 17, 13, 7* (in Mo. Bot. Gard. Herb., 54757, 54758, and 54760 respectively); Belleplain, *C. L. Shear, 1250;* Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 18, 514c, and Ell. & Ev., Fungi Col., 306.

Pennsylvania: *E. Michener, 88* (in Mo. Bot. Gard. Herb., 5044); Germantown, *E. A. Burt;* Huntington Co., *A. S. Rhoads, 7* (in Mo. Bot. Gard. Herb., 44084); Lancaster City, *Mrs. A. F. Eby* (in Mo. Bot. Gard. Herb., 5083); Kittanning, *D. R. Sumstine, 4, 7, 7;* Philadelphia, *A. S. Rhoads, 19* (in Mo. Bot. Gard. Herb., 44096); in coal mine, Pottsville, *C. J. Humphrey, 310;* Spruce Creek, *J. H. Faull,* Univ. Toronto Herb., 357, 359, 334, 670, 355, 667 (in Mo. Bot. Gard. Herb., 44869, 44871, 44888, 44917, 44926, and 44934 respectively); Shingleton Gap, *A. S. Rhoads, 15* (in Mo. Bot. Gard. Herb., 44093); State College, *C. R. Orton, 1, 18* (in Mo. Bot. Gard. Herb., 44079, 44095), comm. by L. O. Overholts, 2658, 5003 (in Mo. Bot. Gard. Herb., 5721, 56345), *A. S. Rhoads, 16* (in Mo. Bot. Gard. Herb., 44094); Trexlertown, *C. G. Lloyd, 0084;* in coal mine, Wadesville Colliery, *C. J. Humphrey, 21583.*

Maryland: Glen Sligo, *C. L. Shear, 1133.*

District of Columbia: Takoma Park, *P. L. Ricker, 820, C. L. Shear, 956.*

Virginia: Great Falls, *O. F. Cook,* comm. by P. L. Ricker; Mt. Vernon, *P. L. Ricker, 1121 in part;* Mountain Lake, *W. A. Murrill, 408* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56618); Norton, *A. B. Seymour* (in Mo. Bot. Gard. Herb., 16405).

North Carolina: *Schweinitz,* type (in Herb. Schweinitz and Curtis Herb.); Blowing Rock, *G. F. Atkinson, 4178, 4180, 4315;* Chapel Hill, *W. C. Coker, 938* (in Mo. Bot. Gard. Herb., 56665); Leicester, *B. B. Higgins,* in Bartholomew, Fungi Col., 2985.

South Carolina: Clemson College, *P. H. Rolfs, 1613, 1616, 1619, 1620, 1624, 1629, 1631, 1635.*

Georgia: Darien, *H. W. Ravenel,* in Ravenel, Fungi Am., 220, 721; Dixie, *R. M. Harper, 1633b,* comm. by N. Y. Bot. Gard. Herb.; Tallulah Falls, *A. B. Seymour,* comm. by W. G. Farlow, 6 (in Mo. Bot. Gard. Herb., 55290).

Florida: *C. G. Lloyd* (in Mo. Bot. Gard. Herb., 44068); Cocoanut Grove, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 43097); Eustis, *L. M. Underwood, 1368, 1801* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56616, 56617).

Alabama: Adger, *C. J. Humphrey;* Montgomery Co., *R. P. Burke, 34* (in Mo. Bot. Gard. Herb., 4273); Maplesville, *C. S. Hill,* comm. by C. J. Humphrey, 251.

Mississippi: Laurel, *C. J. Humphrey, 5431, 5435;* Ocean Springs, *F. S. Earle* (in Mo. Bot. Gard. Herb., 5118).

Louisiana: Baton Rouge, *C. W. Edgerton, 848,* comm. by C. J. Humphrey; St. Martinville, *A. B. Langlois, 2902, bf.*

Ohio: Cincinnati, *D. L. James,* in Ellis, N. Am. Fungi, 514c, *C. G. Lloyd, 1579, 4499, 4501, 4506;* Columbus, *W. A. Kellerman,* in Kellerman, Ohio Fungi, 33, under the name *S. versicolor;* Granville, *H. L. Jones;* Linwood, *C. G. Lloyd, 2436, 02821, 02830;* Penfield, *F. D. Kelsey* (in Mo. Bot. Gard. Herb., 5075); Worthington, *Dr. Paddock* (in Mo. Bot. Gard. Herb., 5114, 5157).

Kentucky: Bowling Green, *Miss S. F. Price* (in Mo. Bot. Gard. Herb., 5038, 5112, 56604); Mammoth Cave, *C. G. Lloyd.*

Tennessee: Algood, *C. J. Humphrey, 308.*

Michigan: Isle Royale, *Allen & Stuntz, 22, 60;* Sailor's Encampment, *E. T. & S. A. Harper, 710;* Vermilion, *A. H. W. Povah, 142* (in Mo. Bot. Gard. Herb., 15144).

Wisconsin: Bayfield, *V. B. Walker, 6b* (in Mo. Bot. Gard. Herb., 9733); Blanchardville, *Miss A. O. Stucki, 47;* Blue Mounds, *Miss A. O. Stucki, 49;* Ithaca, *W. Trelease, 89* (in Mo. Bot. Gard. Herb., 56606); Madison, *E. T. Bartholomew,* in Bartholomew, Fungi Col., 3985, *Miss A. O. Stucki, 31, 35, 36, 50, W. Trelease* (in Mo. Bot. Gard. Herb., 56605); Syene, *W. Trelease, 90* (in Mo. Bot. Gard. Herb., 5072).

Indiana: Greencastle, *L. M. Underwood, 2* (in Mo. Bot. Gard. Herb., 44101); Hibernian Mills, *Whetzel & Reddick,* comm. by D. Reddick, 6, 8; Ladoga, *P. J. Anderson, 1* (in Mo. Bot. Gard. Herb., 55838); Wabash "bottom", *W. Trelease* (in Mo. Bot. Gard. Herb., 5073).

Illinois: Brownsville, *E. T. & S. A. Harper, 951;* Cobden (in Mo. Bot. Gard. Herb., 44102); Grand Pass Club, *W. Trelease* (in Mo. Bot. Gard. Herb., 5053); Jacksonville, *E. Bartholomew,* in Bartholomew, Fungi Col., 2590.

Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 43702); Clayton, *A. M. Ferguson* (in Mo. Bot. Gard. Herb., 5131); Columbia, *B. M. Duggar, 346a, 562, 580;* Creve

Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 8727); Lincoln Co., *C. Trenning* (in Mo. Bot. Gard. Herb., 4098); Meramec, *P. Spaulding, 1*, and (in Mo. Bot. Gard. Herb., 5020), *Spaulding & Johnson* (in Mo. Bot. Gard. Herb., 5013–5015); Meramec Highlands, *N. M. Glatfelter* (in Mo. Bot. Gard. Herb., 42583); Old Orchard, *L. H. Pammel* (in Mo. Bot. Gard. Herb., 5020, 5041); Piedmont (in Mo. Bot. Gard. Herb., 4783); Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44057); Valley Park, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42859); White House, *E. A. Burt* (in Mo. Bot. Gard. Herb., 43808), contains mesopod specimen; Willow Springs, *H. von Schrenk, 1, 2* (in Burt Herb. and Mo. Bot. Gard. Herb., 42886, 42851).

Arkansas: Bertig, *W. Trelease* (in Mo. Bot. Gard. Herb., 5148); Big Flat, *W. H. Long, 19859* (in Mo. Bot. Gard. Herb., 8268); Fayetteville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2884; Womble, *W. H. Long, 19866* (in Mo. Bot. Gard. Herb., 8889); Wynne, *W. Trelease* (in Mo. Bot. Gard. Herb., 5147, 5152).

Oklahoma: Poteau, *W. Trelease* (in Mo. Bot. Gard. Herb., 5052); Spiro, *E. Bartholomew*, in Bartholomew, Fungi Col., 4291.

Texas: *L. H. Pammel* (in Mo. Bot. Gard. Herb., 56607); Austin, *W. H. Long, Jr., 739;* Gillespie County, *G. Jermy* (in Mo. Bot. Gard. Herb., 5048–5050) and *443*, comm. by U. S. Dept. Agr. Herb.; Joaquin, *E. Bartholomew*, in Bartholomew, Fungi Col., 4986; Quitman, *W. H. Long, 12099* (in Mo. Bot. Gard. Herb., 55126); Waco, *W. H. Long, Jr., 508.*

South Dakota: Black Hills, *J. R. Weir, 10012* (in Mo. Bot. Gard. Herb., 55793).

Nebraska: Memphis, *T. A. Williams*, comm. by C. L. Shear, 1059; Nebraska City, *V. B. Walker, 10* (in Mo. Bot. Gard. Herb., 12963).

Kansas: Bourbon County, *A. G. Barrett, 112, 115, 126, 127;* Topeka, *E. T. & S. A. Harper, 753.*

Colorado: Golden, *Bethel & Overholts*, comm. by L. O. Overholts, 1758 (in Mo. Bot. Gard. Herb., 54871).

New Mexico: Cloudcroft, *F. S. Earle, 495* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 1546).

Montana: Moeville, *J. A. Hughes*, comm. by J. R. Weir, 9750 (in Mo. Bot. Gard. Herb., 56225).

Idaho: Moscow, *J. R. Weir, 7946* (in Mo. Bot. Gard. Herb., 56218); Priest River, *J. R. Weir, 6, 11, 49.*

British Columbia: Secamons, *J. Macoun, 166;* Sidney, *J. Macoun, 57, 70, 71* (in Mo. Bot. Gard. Herb., 5739, 5746, 5747).

Washington: Bingen, *W. N. Suksdorf, 694;* Friday Harbor, *V. B. Walker, 2* (in Mo. Bot. Gard. Herb., 8359); Lake Waldemen, *C. H. Kauffman* (in Mo. Bot. Gard. Herb., 20763); Seattle, *S. M. Zeller, 63, 118* (in Mo. Bot. Gard. Herb., 44137, 44143); Tacoma, *E. Bartholomew, 4929* (in Mo. Bot. Gard. Herb., 20810).

Oregon: Corvallis, *C. E. Owens, 2032, 2026, 2055, 2140, 2141* (in Mo. Bot. Gard. Herb., 43874–43876, 44700, 44701); Granite Pass, *J. R. Weir, 8675* (in Mo. Bot. Gard. Herb., 36750); Wallowa, *C. J. Humphrey, 265;* Siskiyou National Forest, *J. R. Weir, 8678* (in Mo. Bot. Gard. Herb., 36751).

California: *R. A. Harper, 39, 108, 142* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56610–12); *C. R. Orcutt,* in Ell. & Ev., N. Am. Fungi, 714; La Honda, *Edna Hyatt,* comm. by C. L. Shear, 1088, 1091; Muir Woods, *W. A. Murrill, 1158,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55715); Redding, *C. J. Humphrey, 1035;* San Francisco, *A. S. Rhoads, 2* (in Mo. Bot. Gard. Herb., 56046); Saratoga, *E. B. Copeland, 1806.*

Arizona: Crown King, *G. G. Hedgcock,* comm. by C. J. Humphrey, 2564 (in Mo. Bot. Gard. Herb., 10752).

Mexico: Cordoba, *W. A. & E. L. Murrill, 996,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54609); Guernavaca, *W. A. & E. L. Murrill, 415, 416, 412,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54518, 54519, 54543); Jalapa, *W. A. & E. L. Murrill, 75, 148, 193,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 11275, 10360, 54436), *C. L. Smith,* in Smith, Central Am. Fungi, 145; Oaxaca, *E. W. D. Holway;* Orizaba, *W. A. & E. L. Murrill, 758,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54632); Parral, *E. O. Matthews* (in Mo. Bot. Gard. Herb., 5722, 10459).

Guatemala: *Maxon & Hay, 3250,* comm. by U. S. Bur. Pl. Ind.

Honduras: *P. Wilson, 138*, comm. by N. Y. Bot. Gard. Herb.
Cuba: Ciego de Avila, *Earle & Murrill, 568*, comm. by N. Y. Bot. Gard. Herb.; Fecha, *F. S. Earle, 146, Earle & Wilson, 224;* Guantanamo, *J. R. Weir, 10644* (in Mo. Bot. Gard. Herb., 56237); Oriente, *J. A. Shafer, 3392, 8468* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56613, 56614); San Diego de los Baños, *Earle & Murrill, 331*, comm. by N. Y. Bot. Gard. Herb.
Porto Rico: Bayamon, *J. A. Stevenson, 5427* (in Mo. Bot. Gard. Herb., 8180); Mayaguez, *F. S. Earle, 89*, comm. by N. Y. Bot. Gard. Herb.; Rio Piedras, *Johnston & Stevenson*, comm. by J. A. Stevenson, 1764, 1937, 2005 (in Mo. Bot. Gard. Herb., 9824, 14220, 14270); San Jaun, *Mr. & Mrs. A. S. Heller, 700*, comm. by N. Y. Bot. Gard. Herb.
Jamaica: Cinchona, *W. A. & E. L. Murrill, 450, 499, 521*, comm. by N. Y. Bot. Gard. Herb., *H. von Schrenk* (in Mo. Bot. Gard. Herb., 43630); Chester Vale, *W. A. & E. L. Murrill, 282, 316*, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. Murrill, 817*, comm. by N. Y. Bot. Gard. Herb.; Moore Town, *W. A. & E. L. Murrill, 160*, comm. by N. Y. Bot. Gard. Herb.
Brazil: *Malme* (in Romell Herb.).
Formosa: Urai, *S. Kusano, II.16* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56587).
Java: *Junghuhn*, authentic specimen of *Thelephora ostrea*, comm. by G. Bresadola.
Philippine Islands: Luzon, *H. M. Curran*, Forestry Bureau, 9665 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56583); Mindanao, *A. D. E. Elmer, 10556*, Philippine Is. Pl. (in Mo. Bot. Gard. Herb., 705743).

45. S. lobatum (Kunze) Fries, Epicr. 547. 1838; Sacc. Syll. Fung. **6:** 568. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 175. 1890. Plate 5, fig. 46.

Thelephora lobata Kunze in Weigelt Exsiccati, 1827; Fries, Linnaea **5:** 527. 1830.—*Stereum Sprucei* Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 331. 1868; Sacc. Syll. Fung. **6:** 567. 1888. —An *S. concolor* Junghuhn, Crypt. Java, 38. 1838? See Sacc. Syll. Fung. **6:** 561. 1888; Bresadola, Hedwigia **51:** 321. 1912.

Illustrations: Engl. & Prantl, Nat. Pflanzenfam. (1: 1**): 124. *text f. 69, A–B;* Hard, Mushrooms, 455. *text f. 382,* as *S. versicolor.*

Type: type distribution in Weigelt Exs.

Fructifications coriaceous, rigid, thin, wedge-shaped to umbonate, sessile, often laterally concrescent, at first tomentose and drying tawny olive, at length with the tomentum becoming pale smoke-gray to whitish, disappearing more or less near the margin and in narrow zones and showing the glabrous, shining, hazel surface of the bared areas, the margin undulate and usually more or less lobed; in structure 300 μ thick, with the intermediate layer composed of densely arranged, thick-walled, hyaline hyphae 4–4½ μ in diameter; hymenium glabrous, even, usually drying pinkish buff; no setae, gloeocystidia, nor conducting organs; spores hyaline, even, flattened on one side, 4–5×1½–2 μ, but few seen.

Pileus usually 3–7 cm. long, 2–6 cm. broad, sometimes much larger by lateral confluence.

On dead branches, logs, and stumps of frondose species in the cases noted. A tropical species ranging northward to New York and Wisconsin and southward to Brazil. Occurs in the Philippine Islands and East Indies also, if *S. concolor* is a synonym.

S. lobatum may be distinguished from the related *S. fasciatum, S. versicolor,* and *S. radians* by having a more or less lobate pileus which is also very thin, somewhat flexible, zonate on the upper side, with glabrous, shining hazel zones alternating with whitish tomentose zones of soft, matted hairs. No specimens of this species which I have examined have the pileus effuso-reflexed when young. Specimens of *S. fasciatum* occasionally have a somewhat lobate margin but the pileus is thicker, more heavily clothed with a tomentum which is more persistent than that of *S. lobatum,* and in its more northern stations where I have been able to observe the development, the young fructifications are often effuso-reflexed at first.

S. lobatum is primarily an American species described from collections made in Surinam, Dutch Guiana, but it seems probable that this species has a more extended geographical range through the tropical lands of the Eastern Hemisphere also. The recent collections in Philippine Islands, determined by

Bresadola as *S. concolor* (Jungh.) and distributed in Elmer, Philippine Islands Plants, show that this species is but slightly, if at all, different from *S. lobatum*. The general aspect is the same but the Philippine specimens are the larger; none of them have their tomentum as soft and whitish as in *S. lobatum*. Some of these specimens have shown in crushed preparations spore-like bodies 3 μ in diameter; spore collections of oriental specimens should be made.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 4586, under the name *S. fasciatum;* Ellis, N. Am. Fungi, 514b, under the name *S. versicolor* v. *fasciata*, 514d, under the name *S. versicolor* v. *petaliforme;* Ravenel, Fungi Car. 1: 28, mixed with *S. fasciatum;* de Thümen, Myc. Univ., 2011, mixed with *S. fasciatum*.

New York: Alcove, *C. L. Shear, 1019;* Ithaca, *L. A. Zinn, 82a* (in Mo. Bot. Gard. Herb., 43074).

Pennsylvania: West Chester, *J. B. Gray*, in Ellis, N. Am. Fungi, 514b.

North Carolina: Black Oak, *H. W. Ravenel*, in Ravenel, Fungi Car. 1: 28; Blowing Rock, *G. F. Atkinson, 4311, 4314;* Chapel Hill, *W. C. Coker, 331* (in Mo. Bot. Gard. Herb., 56663); Transylvania County, *W. A. Murrill & H. D. House, 425* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56602).

Georgia: Flint River, *R. M. Harper, 1401a*, comm. by N. Y. Bot. Gard. Herb. (also in Mo. Bot. Gard. Herb., 5087); Dixie, *R. M. Harper, 1633* (in Mo. Bot. Gard. Herb., 56603).

Florida: *C. G. Lloyd, 4833;* Crescent City, *Dr. G. Martin*, in Ellis, N. Am. Fungi, 514d; Eustis, *G. V. Nash, 2128* (in Mo. Bot. Gard. Herb., 5118), and *L. M. Underwood, 1371* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56601); Lake City, *P. L. Ricker, 893;* New Smyrna, *C. G. Lloyd, 183;* Tallahassee, *E. Bartholomew*, in Bartholomew, Fungi Col., 4586.

Alabama: Auburn, *F. S. Earle*, from Lloyd Herb., 3459; Chehaw, *E. A. Burt*, two collections; Fayette Co., *P. V. Siggers*, comm. by A. H. W. Povah, 14 (in Mo. Bot. Gard. Herb., 9229).

Louisiana: Natchitoches, *G. F. Atkinson, 5118, 5119;* St. Martinville, *A. B. Langlois, be.*
Ohio: Cincinnati, *C. G. Lloyd, 1677, 4495, 4502.*
Wisconsin: Madison, *C. J. Humphrey, 2508* (in Mo. Bot. Gard. Herb., 42927).
Kentucky: Mammoth Cave, *C. G. Lloyd.*
Missouri: Kennett, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42996); Neeleyville, *F. C. Dewart* (in Mo. Bot. Gard. Herb., 5132, 5135).
Mexico: *W. Trelease* (in Mo. Bot. Gard. Herb., 5123); Guernavaca, *E. W. D. Holway.*
Honduras: *P. Wilson, 180, 671,* comm. by N. Y. Bot. Gard. Herb.
Cuba: *C. Wright, 197, 271* (in Curtis Herb.), and *521,* the type of *S. Sprucei* (in Kew Herb.); Baracoa, *L. M. Underwood & F. S. Earle, 796, 1068,* comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey, 2722* (in Mo. Bot. Gard. Herb., 8638).
Porto Rico: Sauerce, *Mr. & Mrs. A. A. Heller, 843, 882,* comm. by N. Y. Bot. Gard. Herb.; Luquillo Mts., *P. Wilson, 203* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56600).
Guadeloupe: in de Thümen, Myc. Univ., 2001.
St. Kitts: *N. L. Britton & J. F. Cowell, 502,* comm. by N. Y. Bot. Gard. Herb.
Jamaica: *A. E. Wight,* comm. by W. G. Farlow; Castleton Gardens, *W. A. & E. L. Murrill, 113,* comm. by N. Y. Bot. Gard. Herb.; Cinchona, *W. A. & E. L. Murrill, 530,* comm. by N. Y. Bot. Gard. Herb.; Moneague, *W. A. Murrill, 1140,* comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. Murrill & W. Harris, 996, 1037,* comm. by N. Y. Bot. Gard. Herb.
Trinidad: Carengo, *M. A. Carriker,* comm. by W. G. Farlow, II.
Grenada: Grand Etang, *R. Thaxter,* comm. by W. G. Farlow, 3.
Venezuela: Margarita, *A. F. Blakeslee,* comm. by W. G. Farlow.

46. S. versicolor (Swartz) Fries, Epicr. 547. 1838; Berkeley, Ann. & Mag. Nat. Hist. I. **10:** 382. *pl. 11. f. 13.* 1842; Sacc.

Syll. Fung. **6**: 561. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 172. 1890; Lloyd, Myc. Writ. **4**. Letter 46:3. 1913.

Plate 5, fig. 47.

Helvella versicolor Swartz, Prodr. 149. 1788.—*Thelephora versicolor* Swartz, Fl. Ind. Oc. **3**: 1934. 1806; Fries, Syst. Myc. **1**: 438. 1821.—*Stereum radians* Fries, R. Soc. Sci. Upsal. Actis III. **1**: 110. 1851; Sacc. Syll. Fung. **6**: 573. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 188. *pl. 7. f. 5.* 1900.

Illustrations: Berkeley, *loc. cit.;* Massee, *loc. cit.*

Type: authentic specimen in Herb. of Brit. Mus. according to Berkeley.

Fructification coriaceous-rigid, very thin, sometimes buff-yellow, clothed with silky, villous fascicles all lying in a radiating direction, becoming glabrous and shining and minutely radially ridged or lineate, wood-brown to cinnamon-brown, the margin entire, not complicate; in structure 300–400 μ thick, composed of densely, longitudinally arranged hyphae 3–3$\frac{1}{2}$ μ in diameter; hymenium even, glabrous, cream-color to avellaneous; no colored conducting organs, gloeocystidia, nor cystidia; spores hyaline, even, 4–5$\times$2–2$\frac{1}{2}$ μ.

Fructifications 1–2$\frac{1}{2}$ cm. broad, 1$\frac{1}{2}$–4 cm. long, often laterally confluent.

On dead wood. Florida, West Indies, Mexico, Dutch Guiana. September to February. Probably common in Jamaica.

S. versicolor is a species intermediate between *S. lobatum* and *S. rameale;* its fructifications are smaller than those of *S. lobatum*, thinner, more completely glabrous at length, with margin not normally lobed, and usually retaining attachment by a narrow, resupinate side of the pileus as well as by the umbo, in which respect there is resemblance to the middle stage of development of *S. fasciatum;* the radial arrangement of the hairs and villous fascicles on the upper surface of the pileus is a highly distinctive character, as first pointed out by Berkeley. The coloration and hairy covering of fructifications of *S. versicolor* are somewhat similar to these characters in *S. rameale*, but the fructifications of the former are not lobed and folded together laterally and crisped nor as slender as those of *S. rameale*, as pointed out by Fries in his description of his *S. radians*. *S. versicolor* was formerly confused with *S. fasciatum*, especially in American

literature; it is doubtful whether *S. versicolor* occurs in the United States except very rarely in Florida.

Specimens examined:

Florida: Dade County, *J. K. Small, 7089, 7122* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56650, 56651); Eustis, Lake County, *L. M. Underwood, 1377* (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 42764).

Cuba: *C. Wright, 291* (in Curtis Herb.); Ceballos, *C. J. Humphrey, 2740* (in Mo. Bot. Gard. Herb., 15720); San Diego de los Baños, *Bro. Leon, 4861* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56647).

Porto Rico: Maricao, *N. L. Britton, J. F. Cowell & S. Brown, 4420* (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56574); Rio Piedras, *J. R. Johnston, 129, 282* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56648, 56641); Sierra de Naguabo, *J. A. Shafer, 3211, 3692, 3693* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56653–56655).

Jamaica: *Farr* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56640); Cinchona, *L. M. Underwood, 3239* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56595), *N. L. Britton, 295, 296* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56642, 56643), *F. S. Earle, 409*, comm. by N. Y. Bot. Gard. Herb., *W. A. & E. L. Murrill, 526, 539*, comm. by N. Y. Bot. Gard. Herb. and *473* (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56644); John Crow Peak, *L. M. Underwood, 2433*, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. Murrill, 814*, comm. by N. Y. Bot. Gard. Herb.; Rose Hill, *F. S. Earle, 50, 282, 305*, comm. by N. Y. Bot. Gard. Herb.; Sir John Peak, *E. G. Britton, 1212* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56641); Troy and Tyre, *W. A. Murrill & W. Harris, 853, 856, 1036, 1048*, comm. by N. Y. Bot. Gard. Herb.

Montserrat: Soufriere, *J. A. Shafer, 919* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56645).

Grenada: Annandale, *W. E. Broadway* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56656); Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 10.

Mexico: Trap. de la Conception, *Liebman*, type of *Stereum radians* (in Herb. Fries); Jalapa, *W. A. & E. L. Murrill, 343*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55477).

47. **S. rameale** Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 106. 1822 (under *B. Sterea* of *Thelephora*). Plate 5, fig. 48.

Thelephora hirsuta Fries, Elenchus Fung. **1**: 178. 1828, but not of Syst. Myc. **1**: 439. 1821.—*T. hirsuta β ramealis* Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.—*Stereum complicatum* Fries, Epicr. 548. 1838; Sacc. Syll. Fung. **6**: 579. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 178. 1890.—*S. radians* of Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 194. 1888, but not *S. radians* Fries.—*Telephora lobata* Bertolonii, Accad. Sci. Bologna Mem. I. **7**: 360. *pl. 19. f. e–g.* 1856; Underwood & Earle, Ala. Agr. Exp. Sta. Bul. 80: 232. 1897.—*Stereum Bertolonii* Saccardo, Sacc. Syll. Fung. **11**: 120. 1895.

Illustrations: Berkeley & Broome, Linn. Soc. Bot. Trans. **2**: *pl. 14. f. 12–14.* 1883; Bertolonii, *loc. cit.*

Type: in Herb. Schweinitz and in Herb. Fries.

Fructifications coriaceous, thin, rigid, effuso-reflexed, rarely resupinate, with the reflexed portion consisting of small, umbonate pilei, which are sometimes subdivided into lobes, the pilei or lobes drying folded together or crisped, fibrose-strigose, becoming glabrous on the marginal portion, shining, with innate fibers radiating from the base, cinnamon-buff to hazel, more or less zoned; hymenium even, glabrous, light buff to cream-buff; in structure 300–450 μ thick, composed of densely, longitudinally arranged, hyaline hyphae 3–3½ μ in diameter, colored conducting organs 3–3½ μ in diameter occasionally present; no cystidia nor gloeocystidia; spores white in spore collection, even, slightly curved, 6×2–2½ μ.



Fig. 24. *S. rameale.* Spores × 650.

Fructifications sometimes covering areas only 5–10 mm. in diameter, and gregarious, at other times irregularly confluent over areas up to 3 cm. broad and 10 cm. and more long; individual pilei 2–10 mm. broad, 3–10 mm. long.

On dead twigs and stumps of oak and other frondose species.

Canada, throughout the United States, except in the Rocky Mountain region, in Mexico and the West Indies. July to January. Common in the United States.

S. rameale varies somewhat under the different conditions as to climate and substratum in the great extent of North America where it is our commonest species of *Stereum*. In the United States and Canada one will hardly go amiss in referring to *S. rameale* any *Stereum* with numerous small pilei densely crowded together imbricately or laterally, strigose hairy near the region of attachment, and with marginal side shining, somewhat zonate, and pinkish buff to hazel in color, and with these pilei drying folded together along the sides, or radially plicate in a laterally confluent form. The pileus of *S. rameale* is thinner than that of *S. hirsutum*, only partially covered with hairs, which do not form as heavy a covering where present, and the pilei are folded together laterally and are smaller than those of *S. hirsutum*. *S. sericeum* has small, shining, very thin pilei between whitish and pale drab-gray on both surfaces—wholly lacking ruddy ochraceous coloration—and almost always growing on *Carpinus caroliniana*.

Schweinitz communicated to Fries specimens of *S. rameale* which are still preserved in the herbarium at Upsala; Fries published the species as a synonym of *S. hirsutum* in Elenchus Fung.; Schweinitz yielded to the authority of Fries but protested that *S. rameale* was a distinct variety, at least. Other American specimens of this species were received by Fries, who described and published them in 1838 as *S. complicatum*, overlooking the earlier and nearly identical specimens from Schweinitz and the earlier, appropriate name for the species.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2881, 4289, 4689, 4985; Ellis, N. Am. Fungi, 324; Ell. & Ev., Fungi Col., 307; Ravenel, Fungi Car. **2**: 30; Fungi Am., 117; Smith, Cent. Am. Fungi, 96, 97—the latter under the name *S. sericeum;* de Thümen, Myc. Univ., 1404.

Canada, Ontario: Belleville, *J. Macoun, 240;* Port Credit, *J. H. Faull,* Univ. Toronto Herb., 317 (in Mo. Bot. Gard. Herb., 44878); Toronto, *R. P. Wodehouse*, Univ. Toronto Herb., 316 (in Mo. Bot. Gard. Herb., 44879).

Maine: Oldtown, *P. L. Ricker.*

Vermont: Brattleboro, Grand View Mt., Lake Dunmore, Middlebury, and Ripton, *E. A. Burt.*

Massachusetts: Arlington, *E. A. Burt;* Amherst, *P. J. Anderson, 6* (in Mo. Bot. Gard. Herb., 55850); Cambridge, *W. Trelease, 81* (in Mo. Bot. Gard. Herb., 5062); Stony Brook, *E. A. Burt;* Waltham, *A. B. Seymour, 12* (in Mo. Bot. Gard. Herb., 22096); Wellesley, *L. W. Riddle, 12;* Worcester, *G. E. Francis.*

Connecticut: *C. C. Hanmer, 2075* (in Mo. Bot. Gard. Herb., 43849); Mansfield, *P. W. Graff, 12* (in Mo. Bot. Gard. Herb., 9854); New Canaan, *P. Wilson, 63* (in Mo. Bot. Gard. Herb., 54739); South Windsor, *C. C. Hanmer.*

New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5062, 44235); Albany, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 15954); Alcove, *C. L. Shear, 1137, 1320, 1323, 1331;* Catskill Mts., *C. H. Peck,* in Ellis, N. Am. Fungi, 324; East Galway, *E. A. Burt,* three collections; Glasco, *P. Wilson, 34, 37, 41, 57* (in Mo. Bot. Gard. Herb., 54728, 54741, 54742, 54727); Ithaca, *G. F. Atkinson, 190 O. S., 2121, 7989, 22969, 22973–22975, C. J. Humphrey, 227, H. S. Jackson,* Cornell Univ. Herb., 14375, 14376, *W. A. Murrill,* Cornell Univ. Herb., 3058, *Van Hook,* Cornell Univ. Herb., 7991, *K. M. Wiegand,* Cornell Univ. Herb., 3258, *L. A. Zimm, 83* (in Mo. Bot. Gard. Herb., 9064); Palisades, *P. Wilson, 16, 21* (in Mo. Bot. Gard. Herb., 54732, 54731); Scarsdale, *Livingston & Crane,* comm. by N. Y. Bot. Gard. Herb., *P. Wilson, 1, 25* (in Mo. Bot. Gard. Herb., 54737, 54730); West Fort Ann, *S. H. Burnham, 15* (in Mo. Bot. Gard. Herb., 44011); Williams Bridge, *P. Wilson, 3, 31* (in Mo. Bot. Gard. Herb., 54740, 54729); Yonkers, *P. Wilson, 1* (in Mo. Bot. Gard. Herb., 54727).

New Jersey: *Laning* (in Mo. Bot. Gard. Herb., 5051, 44236, 44238); Alpine, *P. Wilson, 15, 9, 14, 5, 4* (in Mo. Bot. Gard. Herb., 54733–54736, 54738); Newfield, *J. B. Ellis,* in Ellis, Fungi Col., 307, and in de Thümen, Myc. Univ., 1404; New Brunswick, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 54353).

Pennsylvania: Bear Meadow, *C. R. Orton & A. S. Rhoads, 13,*

14 (in Mo. Bot. Gard. Herb., 44090, 44091); Bellefonte, *L. O. Overholts, 3715* (in Mo. Bot. Gard. Herb., 54996); Kittanning, *D. R. Sumstine, 3, 9, 12;* North Garden, *E. Michener, 437* (in Mo. Bot. Gard. Herb., 44237); Shingleton Gap, *A. S. Rhoads, 11* (in Mo. Bot. Gard. Herb., 44089); Spruce Creek, *J. H. Faull,* Univ. Toronto Herb., 313 (in Mo. Bot. Gard. Herb., 44885).

Delaware: Newark, *H. S. Jackson, B9.*

Maryland: Cabin John Bridge, *C. L. Shear, 1045;* Cabin John Creek, *A. S. Rhoads,* comm. by L. O. Overholts (in Mo. Bot. Gard. Herb., 55069); Chevy Chase, comm. by Mrs. F. W. Patterson (in Mo. Bot. Gard. Herb., 43730); Takoma Park, *A. S. Rhoads,* comm. by L. O. Overholts (in Mo. Bot. Gard. Herb., 55049), *C. L. Shear, 1160.*

District of Columbia: Takoma Park, *P. L. Ricker, 818.*

Virginia: Mt. Vernon, *P. L. Ricker, 1121 in part.*

North Carolina: *Schweinitz,* type (in Herb. Schweinitz and Herb. Fries); Chapel Hill, *W. C. Coker, 3802, 2026, 1047, 362, 333* (in Mo. Bot. Gard. Herb., 56657–56661); Salem, *Schweinitz,* the *Thelephora ochroleuca* of Schweinitz, Syn. N. Am. Fungi, 644 (in Herb. Schweinitz).

South Carolina: *H. W. Ravenel,* in Ravenel, Fungi Car. **2**: 30; Clemson College, *P. H. Rolfs, 1614, 1628;* Davidson River, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42964); Society Hill, *H. W. Ravenel* (in Curtis Herb., 1439, under the name *Stereum plicatum*).

Georgia: Atlanta, *E. Bartholomew, 5674* (in Mo. Bot. Gard. Herb., 44217); Glenbrook Ravine, *A. B. Seymour,* from Farlow Herb., J (in Mo. Bot. Gard. Herb., 44649); Thomson, *H. H. Bartlett,* comm. by W. G. Farlow.

Florida: *C. G. Lloyd, 4851, 4852;* Camp Pinchot, *W. H. Long, 12212* (in Mo. Bot. Gard. Herb., 55143); Daytona, *D. L. James,* comm. by U. S. Dept. Agr. Herb.; Gainesville, *H. W. Ravenel,* in Ravenel, Fungi Am., 117; New Smyrna, *C. G. Lloyd, 2112.*

Alabama: *Dr. Gates,* probably from the type collection of *Telephora lobata* Bertolonii, from Torrey Herb. (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56295); Auburn, *F. S. Earle,* four specimens in Burt Herb., and two

others (in Mo. Bot. Gard. Herb., 5107, 56619—the last in N. Y. Bot. Gard. Herb. also); Montgomery Co., *R. P. Burke, 28* (in Mo. Bot. Gard. Herb., 17856).

Mississippi: Biloxi, *F. S. Earle, 29;* Hattiesburg, *C. J. Humphrey, 5451;* Jackson, *E. Bartholomew, 5779, 5797, 5784* (in Mo. Bot. Gard. Herb., 44223–44225) and Bartholomew, Fungi Col., 4689; Laurel, *C. J. Humphrey, 5430;* Ocean Springs, *F. S. Earle, 177* (in Mo. Bot. Gard. Herb., 5065).

Louisiana: *A. B. Langlois, 2906;* Alden Bridge, *W. Trelease* (in Mo. Bot. Gard. Herb., 5047); Baton Rouge, *C. J. Humphrey, 5699* (in Mo. Bot. Gard. Herb., 14102); New Orleans, *E. Bartholomew, 5764* (in Mo. Bot. Gard. Herb., 5440, 44222), *E. A. Burt;* St. Martinville, *A. B. Langlois, bc* (in Burt Herb.), *1101* (in Mo. Bot. Gard. Herb., 5063); Shreveport, *E. Bartholomew,* in Bartholomew, Fungi Col., 4689.

Ohio: Cincinnati, *A. P. Morgan,* comm. by Lloyd Herb., 2633; College Hill, *C. G. Lloyd, 1457;* Linwood, *C. G. Lloyd, 02833.*

Indiana: Avilla, *W. H. Rankin* (in Mo. Bot. Gard. Herb., 9183); Crawfordsville, *D. Reddick, 12;* Greencastle, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56277).

Illinois: Bowmansville, comm. by Univ. Wis. Herb., 4, and *E. T. & S. A. Harper, 436;* River Forest, *E. T. & S. A. Harper, 709.*

Kentucky: Bowling Green, *S. F. Price* (in Mo. Bot. Gard. Herb., 5036).

Tennessee: Elkmont, *C. H. Kauffman, 58, 61, 63* (in Mo. Bot. Gard. Herb., 16384, 3993, 1678); Nashville, *E. Bartholomew, 5634* (in Mo. Bot. Gard. Herb., 44214).

Michigan: Chelsea, *C. H. Kauffman, 23;* New Richmond, *C. H. Kauffman, 44, 43* (in Mo. Bot. Gard. Herb., 22507, 22856).

Minnesota: *E. L. Jensen, 2* (in Mo. Bot. Gard. Herb., 3939).

Wisconsin: *Miss A. D. Stucki,* Univ. Wis. Herb., 7; Blue Mounds, *Miss A. D. Stucki,* Univ. Wis. Herb., 6; Madison, *Miss A. D. Stucki,* Univ. Wis. Herb., 10.

Iowa: *E. W. D. Holway.*

Missouri: *B. M. Duggar, 568;* Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 43701); Cox's Switch, *H. von*

Schrenk (in Mo. Bot. Gard. Herb., 42892); Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44757); Columbia, *L. E. Cline*, comm. by B. M. Duggar, A555; Gasconade Co., *W. Trelease* (in Mo. Bot. Gard. Herb., 5128); Meramec, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5019); Neeleyville, *Dewart* (in Mo. Bot. Gard. Herb., 5127, 5130); St. Francis River, *W. Trelease* (in Mo. Bot. Gard. Herb., 5129); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 8724, 44757), and *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42873); Williamsville, *B. M. Duggar & H. S. Reed, 47*.

Arkansas: Arkadelphia, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56620); Batesville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2881; Cass, *W. H. Long, 19835* (in Mo. Bot. Gard. Herb., 6384); Womble, *W. H. Long, 19671, 19649, 19865* (in Mo. Bot. Gard. Herb., 6386, 6385, 8887); Wynne, *W. Trelease* (in Mo. Bot. Gard. Herb., 5039).

Texas: *H. W. Ravenel, 40* (in U. S. Dept. Agr. Herb.); Joaquin, *E. Bartholomew*, in Bartholomew, Fungi Col., 4985; Somerville, *H. von Schrenk, 1*.

Colorado: Tolland, *L. O. Overholts, 2000* (in Mo. Bot. Gard. Herb., 54872).

British Columbia: Hastings, *J. Macoun;* Sidney, *J. Macoun, 14, 382* (in Macoun Herb.) and *56, 72* (in Mo. Bot. Gard. Herb., 5738, 5748).

Washington: Bellingham, *J. R. Weir, 543, 547, 593* (in Mo. Bot. Gard. Herb., 18629, 18712, 36745); Metaline Falls, *J. R. Weir, 5245, 590* (in Mo. Bot. Gard. Herb., 55650, 36744); Seattle, *W. A. Murrill, 137*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55736).

Oregon: Corvallis, *W. A. Murrill, 892b*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55719), and *C. E. Owens, 2033, 2134, 2147* (in Mo. Bot. Gard. Herb., 43873, 44697, 9186).

California: *R. A. Harper, 121, 128* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56621, 56622); Palo Alto, *W. A. Murrill & L. S. Abrams, 1170*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55710).

Mexico: Jalapa, *W. A. & E. L. Murrill, 57, 70, 348*, comm. by

N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 23108, 3732, 54475), and *C. L. Smith*, in Smith, Central Am. Fungi, 96, 97; Orizaba, *W. A. & E. L. Murrill, 799*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54624); Trap. de la Conception, *Liebman*, authentic specimen of *Stereum complicatum* (in Herb. Fries).

Porto Rico: Indiera Fria, *N. L. Britton, J. F. Cowell & S. Brown, 4483* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56623).

Jamaica: Abbey Green, *W. Harris, 1022;* Cinchona, *F. S. Earle, 360*, and *W. A. & E. L. Murrill, 600*, both numbers comm. by N. Y. Bot. Gard. Herb.; Hope, *F. S. Earle, 119*, comm. by N. Y. Bot. Gard. Herb.; New Haven Gap, *W. A. & E. L. Murrill, 770*, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. Murrill, 790, 802*, comm. by N. Y. Bot. Gard. Herb.; Rose Hill, *F. S. Earle, 309, 312*, comm. by N. Y. Bot. Gard. Herb.

48. S. sericeum Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 106. 1822 (in *B. Sterea* of *Thelephora*); Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 195. 1888; Sacc. Syll. Fung. **6**: 579. 1888. Plate 5, fig. 49.

Thelephora striata Fries, Elenchus Fung. **1**: 178. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.—*Stereum striatum* Fries, Epicr. 548. 1838, but not of p. 551 nor of Hym. Eur. 641. 1874.

Illustrations: Hard, Mushrooms, 456. *text f. 383.*

Type: not found by me in Herb. Schweinitz although studied by Berkeley & Curtis, Acad. Nat. Sci. Phila. Jour. **3**: 220. 1856.

Fructifications coriaceous, small, very thin and papery, effuso-reflexed, laterally confluent, with reflexed portion divided into small pilei, sometimes orbicular and attached by a central point with margin free all around, the upper side whitish to cartridge-buff, shining, silky, with minute radiate fibrils, the margin entire, thinning to subfimbriate, not complicate; hymenium even, wood-brown when most deeply colored, becoming bleached; in structure 250–300 μ thick, composed of densely and longitudinally arranged hyaline

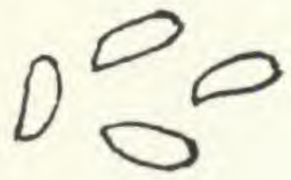


Fig. 25.
S. sericeum.
Spores × 665.

hyphae 3–3½ μ in diameter; no colored conducting organs, gloeocystidia, nor cystidia present; spores hyaline, even, flattened on one side, 6–7½×3–3½ μ.

Fructifications 1–1½ cm. in diameter, confluent along limbs 10 cm. and more, the reflexed portion 5–10 mm. broad, 3–10 mm. long.

In swampy woods on under side of dead twigs of *Carpinus caroliniana*, recorded rarely on *Liquidambar* and *Nyssa*. Canada to Louisiana and westward to Missouri and in Mexico. Throughout the year. Infrequent.

Stereum sericeum is very appropriately named, for its silvery to pale gray pilei are noteworthy by their silky or satiny luster; they are smaller, thinner, and more flexible than those of *S. rameale* and with innate rather than fibrose-strigose fibrils; these pilei lack the ruddy and ochraceous hues characteristic of *S. rameale;* furthermore the pilei of *S. sericeum* are plane, while those of *S. rameale* are folded laterally or crisped. Nevertheless I have received some scanty specimens of *S. rameale* from the West and South which were sparsely developed and bleached out so as to simulate *S. sericeum*. In New England and New York, *S. sericeum* has been invariably on *Carpinus caroliniana* when the substratum has been recorded, but elsewhere *S. rameale* has sometimes been recorded on other substrata.

The concept of *S. sericeum* is that held by all American mycologists and is in conformity with the specimens in Curtis Herbarium determined by Berkeley and Curtis who studied the authentic specimen.

Specimens examined:

Exsiccati: Ellis, N. Am. Fung., 19; Ell. & Ev., Fungi Col., 705; Ravenel, Fungi Car. 1: 21; Shear, N. Y. Fungi, 312.

Ontario: London, *J. Dearness;* Ottawa, *J. Macoun, 20, 30, 277;* Toronto, *G. H. Graham,* Univ. Toronto Herb., 675 (in Mo. Bot. Gard. Herb., 44918), and *T. Langton,* Univ. Toronto Herb., 518, 594 (in Mo. Bot. Gard. Herb., 44842, 44848).

Vermont: Middlebury, *E. A. Burt,* five collections.

Massachusetts: Wayland, *A. B. Seymour, T23* (in Mo. Bot. Gard. Herb., 22097).

Connecticut: Goshen, *L. M. Underwood, 224* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56658).

New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5045); Alcove, *C. L. Shear, 1047, 1124, 1211, 1314, 1325, 1332,* and in Shear, N. Y. Fungi, 312; Glasco, *P. Wilson, 36* (in Mo. Bot. Gard. Herb., 54744); Grand View, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42795); Ithaca, *G. F. Atkinson, 178 O. S., 2827, 22968,* and *W. C. Muenscher, 4* (in Mo. Bot. Gard. Herb., 56594); McLean, *W. C. Muenscher, 98* (in Mo. Bot. Gard. Herb., 56596); Taughannock Gorge, *W. C. Muenscher, 199* (in Mo. Bot. Gard. Herb., 56595).

New Jersey: Newfield, *J.B. Ellis,* in Ellis, N. Am. Fungi, 19, Ell. & Ev., Fungi Col., 705, and (in Mo. Bot. Gard. Herb., 5103).

Pennsylvania: *E. Michener, 399* (in Mo. Bot. Gard. Herb., 5104); State College, *L. O. Overholts, 3054* (in Mo. Bot. Gard. Herb., 5688).

District of Columbia: Takoma Park, *C. L. Shear, 957.*

North Carolina: Chapel Hill, *W. C. Coker, 1043* (in Mo. Bot. Gard. Herb., 56668).

South Carolina: Black Oak, *H. W. Ravenel,* in Ravenel, Fungi Car. **1:31.**

Florida: Tallahassee, comm. by W. G. Farlow.

Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56661–56663); Fayette Co., *P. V. Diggers,* comm. by A. H. W. Povah, 17 (in Mo. Bot. Gard. Herb., 20803); Montgomery Co., *R. P. Burke, 32, 137* (in Mo. Bot. Gard. Herb., 15929, 10934); Tuskegee, *C. W. Carver, 369* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56664).

Mississippi: Biloxi, *F. S. Earle, 27.*

Louisiana: New Orleans, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56660).

Ohio: Cleveland, *H. C. Beardslee;* Columbus, *W. A. Kellerman,* in Kellerman, Ohio Fungi, 139 (in Mo. Bot. Gard. Herb., 5042); Norwood, *C. G. Lloyd, 2270;* Oberlin, and also Penfield, *F. D. Kelsey* (in Mo. Bot. Gard. Herb., 56665 and 56666 respectively).

Indiana: Scottsburg, *J. R. Weir, 5803* (in Mo. Bot. Gard. Herb., 55643).

Michigan: Agricultural College, *Hicks,* comm. by W. G. Farlow.

Missouri: Columbia, *B. M. Duggar, 553.*

Mexico: Jalapa, *W. A. & E. L. Murrill, 343 in part,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 56672).

49. S. pubescens Burt, n. sp. Plate 5, fig. 50.

Type: in Mo. Bot. Gard. Herb., N. Y. Bot. Gard. Herb., and Burt. Herb.

Fructification coriaceous, thin, orbicular, conchate-reflexed, attached by one side and the center, reflexed all around but more broadly on the upper side, white, pubescent with soft matted hairs, not zonate nor sulcate; hymenium drying even or somewhat radiately rugose, sorghum-brown to dusky drab, shining; in structure 600 μ thick exclusive of the tomentum, with the occasional hymenial wrinkles standing out up to 120 μ further; intermediate layer bordered next to the tomentum by a narrow, dense, colored zone and composed of longitudinally arranged and somewhat loosely interwoven hyaline, thick-walled hyphae $3\frac{1}{2}$ μ in diameter; no vesicular organs, conducting organs, gloeocystidia, nor cystidia present; hymenium composed of a single layer of simple basidia with 4 sterigmata; spores hyaline, even, oval, 6×4 μ.

Fructifications 3–10 mm. in diameter, reflexed 1–3 mm.

On dead limbs of a frondose species. Montana. April. Probably rare.

S. pubescens has small fructifications with some resemblance in aspect to those of *Cenangium furfuraceum* but white and pubescent with soft matted hairs. Specimens from this gathering were communicated by Ellis, No. 7014, to Cooke and were regarded by Cooke as a young *Stereum*, related to *Stereum purpureum* and, perhaps, young specimens of this species. *S. pubescens* differs sharply from *S. purpureum* in having no pyriform, vesicular organs. The specimens are so mature that many basidia bearing sterigmata are present and occasionally spores. In the smaller specimens the hymenium is even but in those 1 cm. in diameter some broad, obtuse, radiating wrinkles are present, which may necessitate the transfer of this species from *Stereum* when better known from future collections.

Specimens examined:

Montana: Sheridan, *Mrs. L. A. Fitch,* in Ellis Collection, 7014, type (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56784).

50. S. conicum Burt, n. sp. Plate 5, fig. 51.

Type: in Farlow Herb. and in Mo. Bot. Gard. Herb.

Pileus coriaceous, small, rather thick, conical, sessile, attached by the vertex, villose, with some specimens whitish to pale olive-buff and others between wood-brown and Sayal-brown; intermediate layer not bordered by a dark zone, nearly colorless, containing many thick-walled and somewhat incrusted hyphal ends 15–25×6 μ but no colored conducting organs; hymenium even, drab, without cystidia; spores hyaline, even, 4–4½×2½ μ.

Pileus 2–4 mm. in diameter, 2–4 mm. high, about ⅖–½ mm. thick.

Singly on small, dead, frondose twigs. Cuba.

If carelessly glanced at, specimens of this species might be referred to *S. ochraceo-flavum*, but in *S. conicum* each of the eight fructifications which I have seen is truly conical, pendant, and attached by its vertex, while the pilei of *S. ochraceo-flavum*, *S. ochroleucum*, etc., are reflexed; the hymenium of *S. conicum* is glabrous, while that of *S. ochraceo-flavum* contains even-walled, non-incrusted cystidia 20–25×4–6 μ, protruding 15 μ. *S. conicum* is noteworthy by the very numerous thick-walled and somewhat incrusted hyphal ends which are present in its intermediate layer. On the hymenial side these bodies curve towards the hymenium but do not reach its surface; on the opposite side they curve to the upper surface of the pileus and protrude as incrusted hairs forming a part of the villose covering of the pileus, a structural feature suggestive of *Cyphella*. The specimens of *S. conicum* were collected by Charles Wright during his last trip to Cuba in about 1860 but were not sent to Berkeley and Curtis for study.

Specimens examined:

Cuba: Fungi Cubensis Wrightiani, 842, *C. Wright*, type, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43906 and in Farlow Herb.).

51. S. vibrans Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 332. 1868; Sacc. Syll. Fung. **6:** 577. 1888. Plate 5, fig. 52.

An *Stereum cupulatum* Patouillard in Duss, Fl. Crypt. Antilles Fr. 233. 1904?

Type: in Curtis Herb. and Kew Herb.

Fructifications coriaceous, orbicular, and attached by the center, or fan-shaped and laterally confluent, lobed, the upper surface velvety hirsute on the region of recent growth, becoming somewhat glabrous in the older region near place of attachment, narrowly concentrically sulcate, somewhat zonate, snuff-brown, becoming Saccardo's umber; hymenium even, Saccardo's umber to drab, somewhat pruinose; in structure 600–800 μ thick, with the intermediate layer connected with the hairy covering by a blackish dense crust; hyphae of intermediate layer snuff-brown, blackening by action of dilute potassium hydrate, longitudinally arranged, thick-walled, $3\frac{1}{2}$–4 μ in diameter; hymenial layer simple; no colored conducting organs, cystidia, nor aculeate paraphyses; spores hyaline, even, $4–5\times2\frac{1}{2}–3$ μ.

Pileus 2–5 cm. in diameter.

On logs. Cuba and Jamaica. October and November. Rare.

S. vibrans is related to *S. crassum* but seems distinct by having smaller spores and a thin, blackish, horn-like crust under the hairy covering; the other histological details are very similar however. *S. vibrans* may be distinguished from the other species of the West Indies by its tobacco color, pruinose hymenium, and lack of cystidia, gloeocystidia, conducting organs, and bottle-brush paraphyses. *S. papyrinum* is of similar coloration, but is more spongy, has incrusted cystidia, and does not have its intermediate layer bordered above by a crust.

Specimens examined:

Cuba: *C. Wright, 530*, type (in Curtis Herb.).

Jamaica: Rose Hill, *F. S. Earle, 299, 303*, comm. by N. Y. Bot. Gard. Herb.

52. S. crassum Fries, R. Soc. Sci. Upsal. Actis III. **1**: 111. 1851 (not *Thelephora crassa* Léveillé); Sacc. Syll. Fung. **6**: 582. 1888.

Type: in Herb. Fries.

Fructification coriaceous, resupinate, effused, sometimes reflexed, villose, blackening, the margin obtuse, determinate, paler; hymenium even, dark chestnut-brown; in structure 1000 μ thick, with intermediate layer not bordered by a darker denser zone or crust, composed of longitudinally and rather loosely

arranged, dark-colored, thick-walled, stiff hyphae $3\frac{1}{2}$–$4\frac{1}{2}$ μ in diameter, not incrusted, which give their color to the fructification; no colored conducting organs, gloeocystidia, nor cystidia; spores hyaline, 9×4 μ.

According to the original collection of *S. crassum* in Herb. Fries, this is a very distinct species, characterized by very dark color throughout and by absence of colored conducting organs, cystidia, and gloeocystidia. It is probably of local distribution, for I have seen but one collection which is even doubtfully referable to *S. crassum*. This specimen, collected at Motzorongo, is wholly resupinate, with hyphae dark-colored and ascending obliquely from the substratum instead of running longitudinally, and the hymenium has dried pinkish buff.

Specimens examined:

Mexico: Mirador, *Liebman*, type (in Herb. Fries); Motzorongo, near Cordoba, *W. A. & E. L. Murrill, 985* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 54648).

53. S. radiatum Peck, Buffalo Soc. Nat. Hist. Bul. **1**: 62. 1873; N. Y. State Mus. Rept. **26**: 72. 1874; Sacc. Syll. Fung. **6**: 571. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 195. 1890. Plate 5, fig. 53.

S. radiatum var. *reflexum* Peck, N. Y. State Mus. Rept. **49**: 45. 1896; Sacc. Syll. Fung. **14**: 217. 1900.—An *Thelephora* (*Stereum*) *corrugata* Léveillé, Ann. Sci. Nat. Bot. III. **5**: 150. 1846?

Type: in N. Y. State Mus. Herb.

Fructification coriaceous, resupinate, with the margin free all around, sometimes reflexed on the upper side, the reflexed portion becoming black above, velutinous, crisped, and somewhat lobed; hymenium uneven, not polished, marked with thick ridges radiating from the center, Sudan-brown, rarely black when turned upward and exposed to direct sunlight and weather; in structure 1000 μ thick, composed of densely and longitudinally arranged, colored hyphae $3\frac{1}{2}$–4 μ in diameter, whose color is dissolved by dilute potassium hydrate solution; no cystidia; spores from spore collections white, even, slightly curved, 9–$10\times3\frac{1}{2}$–4 μ.

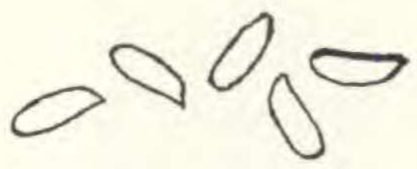


Fig. 26. *S. radiatum*. Spores × 665.

Fructifications 2 cm. in diameter up to 10×3 cm.; reflexed portion 2–8 mm. broad.

Under side of hemlock, spruce, and pine boards and logs and charred wood. Canada to Pennsylvania and westward to Montana; received also from Russia where growing on rotten wood in greenhouse.

S. radiatum is readily recognized by its bright, ferruginous hymenium with shallow broad ridges radiating from the center to the margin, and by the black upper side of the pileus when reflexed. The general aspect, coloration, and color changes with KHO solution are suggestive of some species of *Hymenochaete* but no setae are present. I endeavored to have comparison made with the type of *Thelephora corrugata* in Museum of Paris Herbarium but Patouillard could not find the specimen there.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 407.

Russia: on rotting wood in a greenhouse, *Janczewsky* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 6173).

Ontario: Harraby, *E. T. & S. A. Harper, 636.*

Vermont: *Howe* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 5962); Lake Willoughby, *W. G. Farlow;* Middlebury, *E. A. Burt,* four collections.

Massachusetts: Cambridge, *W. G. Farlow;* Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow, O (in Mo. Bot. Gard. Herb., 55002).

New York: Albany, *C. H. Peck,* in Ellis, N. Am. Fungi, 407; Alcove, *C. L. Shear, 1301;* Freeville, *G. F. Atkinson,* Cornell Univ. Herb., 18185; Ithaca, *C. O. Smith, H. H. Whetzel, L. M. Wiegand,* Cornell Univ. Herb., 8029, 13809, and 3254 respectively.

Pennsylvania: State College, *L. O. Overholts, 2653* (in Mo. Bot. Gard. Herb., 5917); Trexlertown, *W. Herbst.*

Michigan: Seney, *C. J. Humphrey, 1843* (in Mo. Bot. Gard. Herb., 17766).

Montana: Darby, *J. R. Weir, 363* (in Mo. Bot. Gard. Herb., 16472).

54. S. patelliforme Burt, n. sp. Plate 5, fig. 54.

Type: In Burt Herb.

Fructification coriaceous-fleshy, resupinate, the margin becoming free or narrowly reflexed, hoary with a few short hairs, drying cinnamon to bone-brown, the margin entire; hymenium even, waxy, cracking in drying, drying cinnamon to bone-brown; in structure 500–800 μ thick, composed of longitudinally and densely arranged, hyaline hyphae 3–3½ μ in diameter, with the intermediate layer not bordered on the upper side by a denser, darker zone; hair-like cystidia hyaline, cylindric, flexuous, 50–60×5–6 μ, emerging up to 40 μ, but rarely present; basidia simple, with 4 sterigmata, often protruded; spores hyaline, even, 9–10×3–4 μ, somewhat curved.

Fructifications 3×2 mm., up to 25×3 mm., the margin free all around and rolled up 1–2 mm.

On fallen branches of *Acer*, *Quercus*, and other frondose species. Washington, California, and New Mexico. August to April. Rare.

S. patelliforme differs from our other Stereums by being of more fleshy consistency and with a waxy hymenium. In these characters it approaches *Corticium*, but it has the longitudinal arrangement of hyphae characteristic of *Stereum* and the margin becomes narrowly reflexed. These characters separate *S. patelliforme* from our other Stereums with the exception of *S. pubescens*, which is snow-white on the upper side with a thick covering of fine soft hairs, is more broadly reflexed, and has a somewhat radiately rugose hymenium.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, *713*, type, *752*, *753*, *884*, *917*.

California: Campo Mts., *C. D. Orcutt*, *2005*, comm. by U. S. Dept. Agr. Herb.

New Mexico: Ute Park, Colfax Co., *P. C. Standley*, *14735*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 44951).

55. S. ochraceo-flavum Schweinitz in Peck, N. Y. State Mus. Rept. **22**: 86. 1869; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 195. 1888; Sacc. Syll. Fung. **6**: 576. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 184. 1890. Plate 5, fig. 55.

Thelephora ochraceo-flava Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.

Type: in Herb. Schweinitz and Curtis Herb.

Fructification coriaceous, thin, small, effuso-reflexed, sometimes confluent along branches, often conical and attached by one side and the umbo and sometimes only by the umbo, the upper side villose-tomentose, somewhat furrowed, white, weathering gray; in structure 200–300 μ thick below the hairy covering, with intermediate layer becoming bordered on the upper side by a denser or colored zone when old and weathered, composed of densely and longitudinally arranged, hyaline hyphae 3–4 μ in diameter; no colored conducting organs; hymenium even, "yellow," becoming cream-buff in the herbarium; cystidia not incrusted, obtuse, 20–25×4–6 μ, protruding up to 15 μ; spores not found.

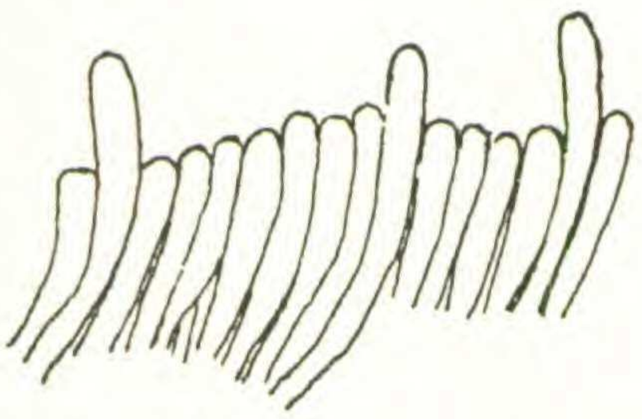


Fig. 27. *S. ochraceo-flavum.* Hymenium showing three cystidia, × 488.

Reflexed portion 3–5 mm. broad, and about as long; scattered conical pilei 3–5 mm. in diameter.

On dead branches of frondose species. Canada to Mississippi and westward to Missouri, and in California and Mexico. July to May.

S. ochraceo-flavum may be recognized at sight by its small, white, conical fructifications heavily clothed with long, soft hairs and by its bright yellow hymenium. The non-incrusted cystidia afford a good distinctive microscopical character for separation of this species from very small specimens of *S. sulphuratum.* In specimens which have persisted beyond their normal season of active growth, the upper side of the intermediate layer becomes hardened and pale golden.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 17; Ell. & Ev., Fungi Col., 6; Ravenel, Fungi Am., 787; Ravenel, Fungi Car. **2:** 31; de Thümen, Myc. Univ., 10.

Ontario: Ottawa, *J. Macoun, 242.*

Vermont: Middlebury, *E. A. Burt.*

Massachusetts: *D. W. Weis,* comm. by C. G. Lloyd, 145 (in Mo. Bot. Gard. Herb., 56687); Cambridge, *E. A. Burt;* Magnolia, *W. G. Farlow.*

Connecticut: Storrs, *A. E. Moss*, comm. by P. W. Graff, 38 (in Mo. Bot. Gard. Herb., 44792).

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55209); East Galway, *E. A. Burt;* Ithaca, Cornell Univ. Herb., 219; Poughkeepsie, *W. R. Gerard, 228, 261* (in N. Y. Bot. Gard. Herb.); Staten Island, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56701).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 17, Ell. & Ev., Fungi Col., 6, and de Thümen, Myc. Univ., 10.

Pennsylvania: Bethlehem, *Schweinitz*, type (in Herb. Schweinitz and in Curtis Herb.); State College, *J. F. Adams, 8* (in Mo. Bot. Gard. Herb., 44085).

Maryland: Seven Locks, *P. L. Ricker, 1005;* Takoma Park, *C. L. Shear, 1119, 1240.*

Virginia: Park Lane, *W. H. Long, 18463* (in Mo. Bot. Gard. Herb., 55101).

North Carolina: Blowing Rock, *G. F. Atkinson, 4316.*

South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. **2**: 31; Summerville, *C. L. Shear, 1228.*

Georgia: Darien, *H. W. Ravenel*, in Ravenel, Fungi Am., 787; Fullerton, *P. L. Ricker, 918.*

Florida: *C. G. Lloyd, 4859;* Hanosassa (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56688); New Smyrna, *C. G. Lloyd, 2089;* Tampa, *N. L. & E. G. Britton & J. A. Shafer, 46* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56689).

Alabama: Auburn, *F. S. Earle & C. F. Baker* (in Burt Herb. and Mo. Bot. Gard. Herb., 5089); Montgomery Co., *R. P. Burke, 22* (in Mo. Bot. Gard. Herb., 12291).

Mississippi: Ocean Springs, *F. S. Earle, 180* (in Mo. Bot. Gard. Herb., 5090).

Michigan: New Richmond, *C. H. Kauffman, 87* (in Mo. Bot. Gard. Herb., 44995).

Wisconsin: Palmyra, *Miss A. O. Stucki*, Univ. Wis. Herb., 40.

Indiana: Millers, *E. T. & S. A. Harper, 938.*

Tennessee: Elkmont, *C. H. Kauffman, 59* (in Mo. Bot. Gard. Herb., 44971).

Iowa: Decorah, *E. W. D. Holway.*

Missouri: Allenton, *Letterman, 48* (in Mo. Bot. Gard. Herb., 5041).
Arkansas: Cass, *W. H. Long, 19833* (in Mo. Bot. Gard. Herb., 17807).
California: Campo Seco, *W. H. Thomas, 3* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 86690).
Mexico: Jalapa, *W. A. & E. L. Murrill, 347*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54468); Orizaba, *J. G. Smith, 511* (in Mo. Bot. Gard. Herb., 437).

56. S. abietinum Persoon, Myc. Eur. **1**: 122. 1822 (under **** *Stereum* of *Thelephora*); Fries, Obs. Myc. **1**: 274. 1815, and ed. 2, 1824; Epicr. 552. 1838; Hym. Eur. 643. 1874; Sacc. Syll. Fung. **6**: 574. 1888. Plate 5, fig. 56.

Thelephora abietina Persoon, Syn. Fung. 573. 1801; Fries, Syst. Myc. **1**: 442. 1821.—*Hymenochaete abietina* (Pers.) Massee, Linn. Soc. Bot. Jour. **27**: 115. 1890.—*Thelephora striata* Schrader, Spic. Fl. Germ. 186. 1794.—*Stereum striatum* Schrader ex Fries, Epicr. 551. 1838; Hym. Eur. 641. 1874; Sacc. Syll. Fung. **6**: 565. 1888.—*Lloydella striata* (Schrad.) Bresadola in Lloyd, Myc. Writ. **1**. Myc. Notes 6: 51. 1901.—*Stereum glaucescens* Fries, Hym. Eur. 644. 1874; Sacc. Syll. Fung. **6**: 575. 1888.—*Hymenochaete fimbriata* Ellis & Everhart, Jour. Myc. **1**: 149. 1885; Sacc. Syll. Fung. **6**: 599. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 113. 1890.—*Hymenochaete abnormis* Peck, N. Y. State Mus. Rept. **42**: 126. *pl. 1. f. 13–16.* 1889; Sacc. Syll. Fung. **9**: 227. 1891.

Illustrations: Istvanffi, Jahrb. f. wiss. Bot. **29**: *pl. 5. f. 16, 17;* Patouillard, Essai Tax. Hym. 72; Peck, N. Y. State Mus. Rept. **42**: *pl. 1. f. 13–16.*

Fructification coriaceous-spongy, dry, thick, resupinate, effused, rarely reflexed, with upper side tomentose, obscurely zonate, burnt umber, tuberculate or uneven; hymenium varying from light drab to cinereous or glaucous; in structure 400–900 μ thick, of which the intermediate layer and the hymenium together constitute 300–600 μ; intermediate layer composed of longitudinally arranged and interwoven colored hyphae 3–3$\frac{1}{2}$ μ in diameter and bordered on its outer side by a darker, denser zone which connects it with the tomentose covering; hymenial

layer becoming zonate and containing numerous colored cystidia having more or less the appearance of colored conducting organs; cystidia colored, cylindric, obtuse, even, rough-walled or more or less incrusted, 90–150 × 6–8 μ, protruding up to 60 μ; spores hyaline, even, flattened on one side, 9–13 × 4–5 μ.

Resupinate specimens 2–8 × 2–5 cm., reflexed margin 3–8 mm. broad.

On wood and logs of *Abies* and *Pinus*. New Hampshire to Washington and in Europe. June to October. Rare.

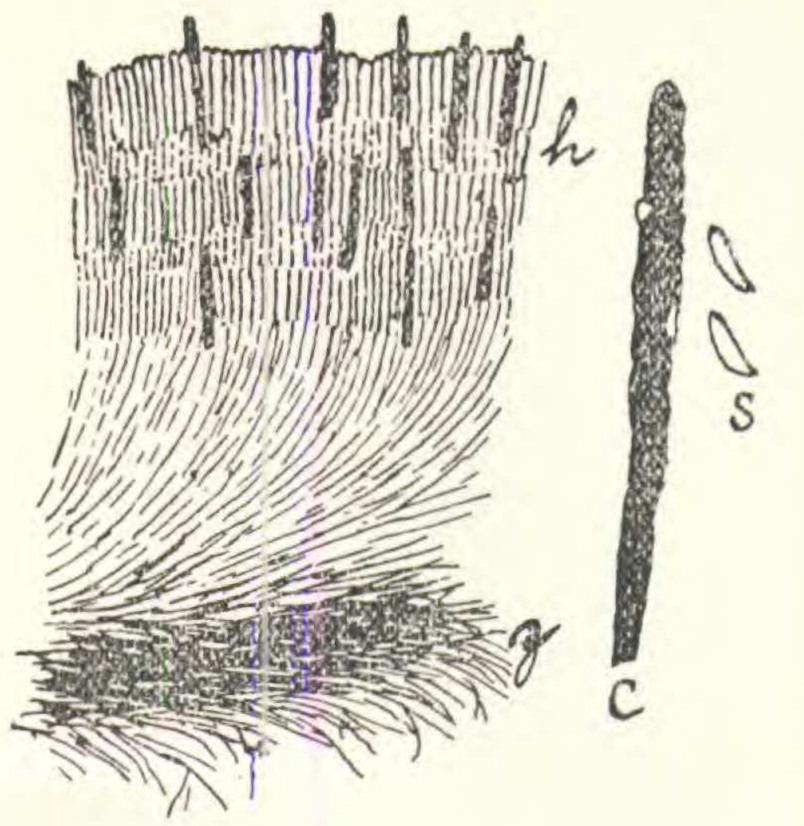


Fig. 28. *S. abietinum*. Section × 68; crust-like zone, *z;* hymenium containing colored cystidia, *h;* cystidium, *c*, and spores, *s*, × 488.

S. abietinum usually occurs resupinate, but its thick, separable, felty fructifications are suggestive of a resupinate *Stereum*, and this view is confirmed by the presence of the intermediate layer when radial, vertical sections are examined. The cinereous, pruinose surface of the hymenium due, however, to whitish, cobwebby filaments rather than powdery grains, is highly characteristic and shared only by the western *S. rugisporum*, as are also the colored cylindric cystidia. *S. rugisporum* is separated by its odor of anise, much thicker and more broadly reflexed pilei, and presence in occasional collections of colored spores imbedded in the deeper zones of the hymenium.

I have included *Hymenochaete fimbriata* among the synonyms of *S. abietinum*, but it may prove to belong with *S. rugisporum* instead.

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 1107.

Norway: Christiania, *M. N. Blytt*, type of *Stereum glaucescens* (in Herb. Fries).

Sweden: Stockholm, *L. Romell, 29;* Upsala, *C. G. Lloyd, 08521* (in Lloyd Herb. and Mo. Bot. Gard. Herb., 55497).

Finland: Mustiala, *P. A. Karsten*, in de Thümen, Myc. Univ., 1107.

Italy (?): locality not stated, *G. Bresadola.*
New Hampshire: Crawford Notch, *L. O. Overholts & A. S. Rhoads* (in Mo. Bot. Gard. Herb., 56342); North Conway, *L. O. Overholts, 4553* (in Mo. Bot. Gard. Herb., 55633).
Vermont: Smugglers Notch, Mt. Mansfield, *E. A. Burt.*
New York: Cascadeville, Adirondack Mts., *C. H. Peck,* type of *Hymenochaete abnormis* (in N. Y. State Mus. Herb.).
Wisconsin: Madison, *M. C. Jensen,* comm. by C. J. Humphrey, 618.
Montana: Yellowstone Park, part of type of *Hymenochaete fimbriata* from J. B. Ellis (in Kew Herb.).
Canada: Rocky Mts., Lake O'Hara, *J. Macoun, 2.*
Washington: Mt. Paddo, *W. N. Suksdorf, 731.*

57. S. rugisporum (Ell. & Ev.) Burt, n. comb.

Plate 6, fig. 58.

Hymenochaete rugispora Ellis & Everhart, Acad. Nat. Sci. Phila. Proc. **1890**: 219. 1890; Sacc. Syll. Fung. **9**: 228. 1891.
Type: in N. Y. Bot. Gard. Herb.

Fructification coriaceous-spongy, dry, thick, effuso-reflexed, finally umbonate along line of attachment to substratum, the upper side tomentose, concentrically sulcate, snuff-brown when young and remaining so on the obtuse margin, elsewhere weathering neutral gray, with an anise-like odor in the herbarium; hymenium even, light mouse-gray, becoming light drab; in structure 2–3 mm. thick, with intermediate layer and hymenium together 800–1200 μ thick and the intermediate layer connected with the loosely interwoven tomentose surface layer by a dark dense zone, the hyphae of the intermediate layer colored, 2–4 μ in diameter, longitudinally arranged and loosely interwoven, curving outward into the hymenial layer; hymenial layer becoming up to 1000 μ thick, zonate, containing colored cystidia and sometimes colored spores $7\frac{1}{2}$–9 $\times 3$–$3\frac{1}{2}$ μ, even or rough-walled; cystidia colored, cylindric, obtuse, even, rough or granule-incrusted, 100–150$\times$7–9 μ, pro-

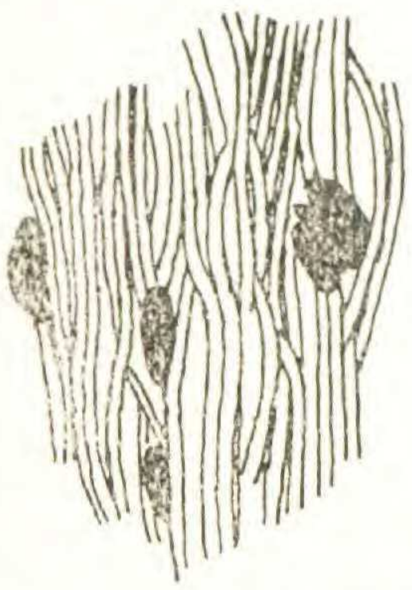


Fig. 29. *S. rugisporum.* Portion of section $\times$ 488, showing colored imbedded spores.

truding up to 120 μ, starting from all parts of the hymenial layer and subhymenium; basidiospores as seen on basidia, hyaline, even, 9–13×3–4½ μ, borne 4 to a basidium.

Reflexed portions 1–4 cm. long and wide, sometimes laterally confluent for 6–8 cm.; resupinate parts of about the same dimensions.

On dead *Abies*, *Picea*, *Pinus*, and *Larix*. In Rocky Mt. states and British Columbia to Arizona. July to September.

Reflexed specimens of *S. rugisporum* may be recognized by their thick, felty, or spongy pilei, deeply concentrically sulcate, and snuff-brown or partly gray in color, with a whitish, pruinose hymenium, and an odor of anise; collections so far made indicate that this species is restricted to conifers of mountainous regions. Microscopic examination of sections shows characteristic cylindric, colored cystidia, which in the subhymenium and the deeper zones of the hymenium are not readily distinguishable from such colored conducting organs as occur in many species of *Stereum*. There is, however, no record of bleeding from wounds of the hymenium of *S. rugisporum* and *S. abietinum*. The type specimen of *S. rugisporum* contains colored spores, usually even, but occasionally rough-walled, imbedded in the deeper zones of the hymenium; similar spores occur in some, but not all, of the collections cited below, but the collections are so similar in other characters that I regard these colored imbedded spores as an important, occasional character of the species, which will positively identify some collections.

The type of *Hymenochaete fimbriata* was collected in Yellowstone Park, Montana, on *Pinus Murrayana;* the specimen is wholly resupinate and does not show colored, imbedded spores in the preparations which I preserved. I regarded this specimen as not specifically distinct from *S. abietinum*, but the type station of *H. fimbriata* makes me uncertain as to whether the latter may not yet be demonstrated to be resupinate *S. rugisporum* instead. When so demonstrated, the specific name *fimbriatum* should be used for the species because of earlier publication.

Specimens examined:

Wyoming: Fox Park, *J. R. Weir, 10009* (in Mo. Bot. Gard. Herb., 55788).

Colorado: Silverton, *E. R. Hodson*, comm. by C. J. Humphrey, 1551; Tolland, *L. O. Overholts*, *1781*, *2336* (in Mo. Bot. Gard. Herb., 56042, 56761); Yankee Doodle Lake, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56729).

Idaho: Bonanza, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2168 (in Mo. Bot. Gard. Herb., 10377); Coolin, *J. R. Weir*, *11476* (in Mo. Bot. Gard. Herb., 56724); Leesburg, *F. S. Wolpert*, comm. by J. R. Weir, 7033 (in Mo. Bot. Gard. Herb., 55463); Priest River, *E. E. Hubert*, comm. by J. R. Weir, 11655 (in Mo. Bot. Gard. Herb., 56725).

British Columbia: *J. Macoun*, *94*, type (in N. Y. Bot. Gard. Herb.).

Washington: Olympic Mts., *T. C. Frye*, *1* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56730); Seattle, *W. A. Murrill*, *130*, *146* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56731, 56732) and *J. M. Grant*, *2066*, comm. by C. G. Lloyd (in N. Y. Bot. Gard. Herb., 56728).

Arizona: Agassiz, *W. H. Long*, *19445* (in Mo. Bot. Gard. Herb., 44734); Mt. Humphrey, Flagstaff, *W. H. Long*, *21306–21308*, *21310* (in Mo. Bot. Gard. Herb., 54897–54899, 54901); Interior Basin, San Francisco Peaks, *W. H. Long*, *21309*, *21311* (in Mo. Bot. Gard. Herb., 54900, 54902).

58. S. ambiguum Peck, N. Y. State Mus. Rept. **47**: 145. 1894; Sacc. Syll. Fung. **11**: 122. 1895. Plate 5, fig. 57.

Type: in N. Y. State Mus. Herb.

Fructifications coriaceous, dry, resupinate, effused, rarely narrowly reflexed, with the upper side tomentose, Prout's brown, the resupinate margin often brighter colored, antique brown, determinate; hymenium velvety, raw umber to Saccardo's umber when mature and thick, becoming deeply cracked in drying; in structure 600–1400 μ thick, with an intermediate layer 400–600 μ broad, composed of longitudinally interwoven, colored hyphae 3–4 μ in diameter, and with a zonate hymenial layer up to 800 μ thick containing colored incrusted cystidia in all the zones; sections darkened by KHO solution; cystidia colored, cylindric, obtuse, usually incrusted, 100–150×7–12 μ, protruding up to 100 μ; basidiospores white in spore collection,

even, 10–13×3½–4½ μ; colored spores 12×3½–4 μ sometimes occur in deeper zones of the hymenium.

Resupinate part 1–8 cm. long, 1–4 cm. wide, reflexed part 1–5 mm. broad in the only reflexed specimen known.

On logs of *Abies* and, perhaps, *Pinus Strobus*. Vermont and New York. June to November. Very rare.

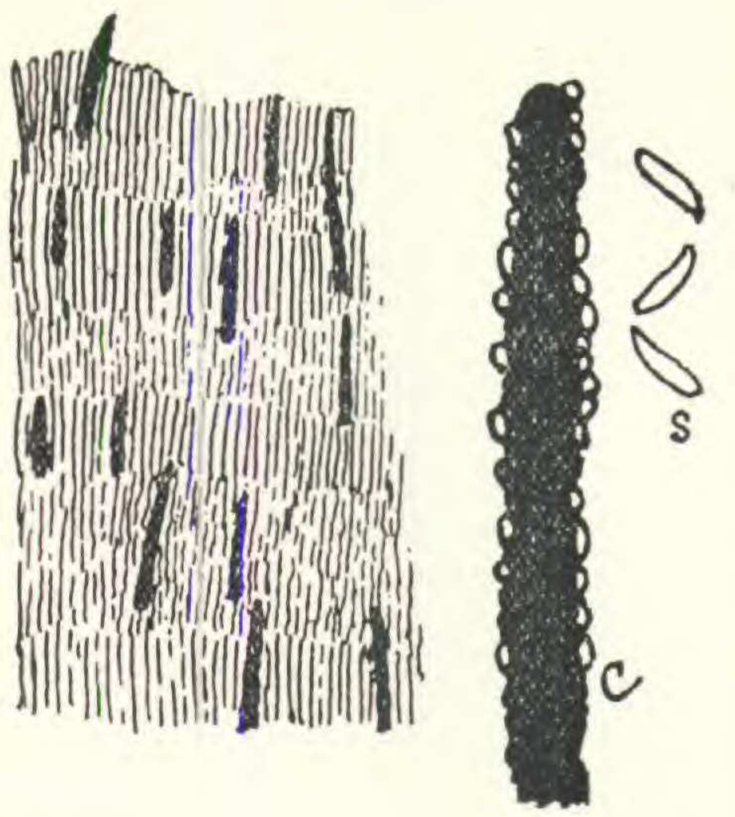


Fig. 30. *S. ambiguum*. Section of hymenial region × 68; peripheral part of cystidium, *c*, and spores, *s*, × 650.

S. ambiguum belongs in the group of species with *S. abietinum* and *S. rugisporum* on account of similarity in microscopic structure including the colored cystidia. It may be separated from both these species at sight by the color of its hymenium which is permanently umber and not at all cinereous nor glaucous. There is a difference in chemical composition also, for dilute potassic hydrate solution blackens the sections and becomes itself discolored as in the case of species of *Hymenochaete*. In fact, the general aspect of resupinate, thick, mature, deeply cracked specimens is very like that of *Hymenochaete spreta*—a species which occurs only exceptionally on a coniferous substratum. It is possible that *S. ambiguum* occurs in reflexed form in the state of Washington, for the collection cited under *S. rugisporum*, Olympic Mts., *T. C. Frye, 1*, resembles *S. ambiguum* but is not quite in perfect enough condition for confident reference here.

Specimens examined:

Vermont: Middlebury, *C. G. Lloyd, 10652* (in Lloyd Herb. and Mo. Bot. Gard. Herb., 44585); Ripton, *E. A. Burt;* Smugglers Notch, Mt. Mansfield, *E. A. Burt.*

New York: Adirondack Mts., *C. H. Peck*, type (in N. Y. State Mus. Herb.); Averyville, *C. H. Peck* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55699).

59. S. umbrinum Berk. & Curtis, Grevillea **1**: 164. 1873; Wakefield, Kew Bul. **1915**: 369. 1915.—Compare *Stereum umbri-*

num Fries in Lehmann, Plantae Preissianae **2**: 137. 1847. Plate 6, fig. 59.

Thelephora crassa Léveillé in Gaudichaud, Voyage Bonite Bot. **1**: 190. *pl. 139. f. 1.* 1846. Not *Stereum crassum* Fries, R. Soc. Sci. Upsal. Actis III. **1**: 111. 1851.—*Hymenochaete crassa* (Lév.) Berkeley in Cooke, Grevillea **8**: 148. 1880; Sacc. Syll. Fung. **6**: 597. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 114. 1890.—*H. umbrina* Berk. & Curtis in Cooke, Grevillea **8**: 148. 1880; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 198. 1888; Sacc. Syll. Fung. **6**: 598. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 113. 1890.—*H. vinosa* (Berk.) Cooke, Grevillea **8**: 149. 1880; Sacc. Syll. Fung. **6**: 600. 1888.—*H. multispinulosa* Peck, Bot. Gaz. **7**: 54. 1882; Sacc. Syll. Fung. **6**: 600. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 108. 1890.—*H. scabriseta* Cooke in Ravenel, Fungi Am., 717. 1882; Massee, Linn. Soc. Bot. Jour. **27**: 113. *pl. 5. f. 7.* 1890.—*Lloydella scabriseta* (Cooke) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **115**: 1580. 1906.—*Hymenochaete purpurea* Cooke & Morgan in Cooke, Grevillea **11**: 106. 1883; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 198. 1888; Sacc. Syll. Fung. **6**: 597. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 115. 1890.—*Knieffia purpurea* (Cooke & Morg.) Bresadola, Ann. Myc. **1**: 100. 1903.—*Peniophora intermedia* Massee, Linn. Soc. Bot. Jour. **25**: 143. 1889; Sacc. Syll. Fung. **9**: 238. 1891. —*Hymenochaete Kalchbrenneri* Massee, Linn. Soc. Bot. Jour. **27**: 116. 1890; Sacc. Syll. Fung. **9**: 230. 1891.

Illustrations: Gaudichaud, Voyage Bonite Bot. *pl. 139. f. 1;* Linn. Soc. Bot. Jour. **27**: *pl. 5. f. 7.*

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous-spongy, resupinate, effused, often becoming reflexed, light vinaceous lilac to dark lavender when young, at length brownish drab to snuff-brown, the upper surface spongy, pitted, somewhat sulcate, the reflexed margin thick, entire; hymenium even, somewhat velvety, sometimes cracking in drying, light vinaceous lilac to snuff-brown; in structure 500–1000 μ thick, composed of loosely interwoven, slightly colored hyphae $3\frac{1}{2}$–5 μ in diameter, not forming an intermediate layer; in the subhymenial region thick-walled organs 5–6 μ in diameter, darker colored than the hyphae, originate among the

hyphae and curve outward through the hymenium as sharp-pointed cystidia, even, rough-walled, or incrusted, 100–200×6–10 μ, protruding up to 40 μ; spores white in spore collection, even, 6×3½ μ.

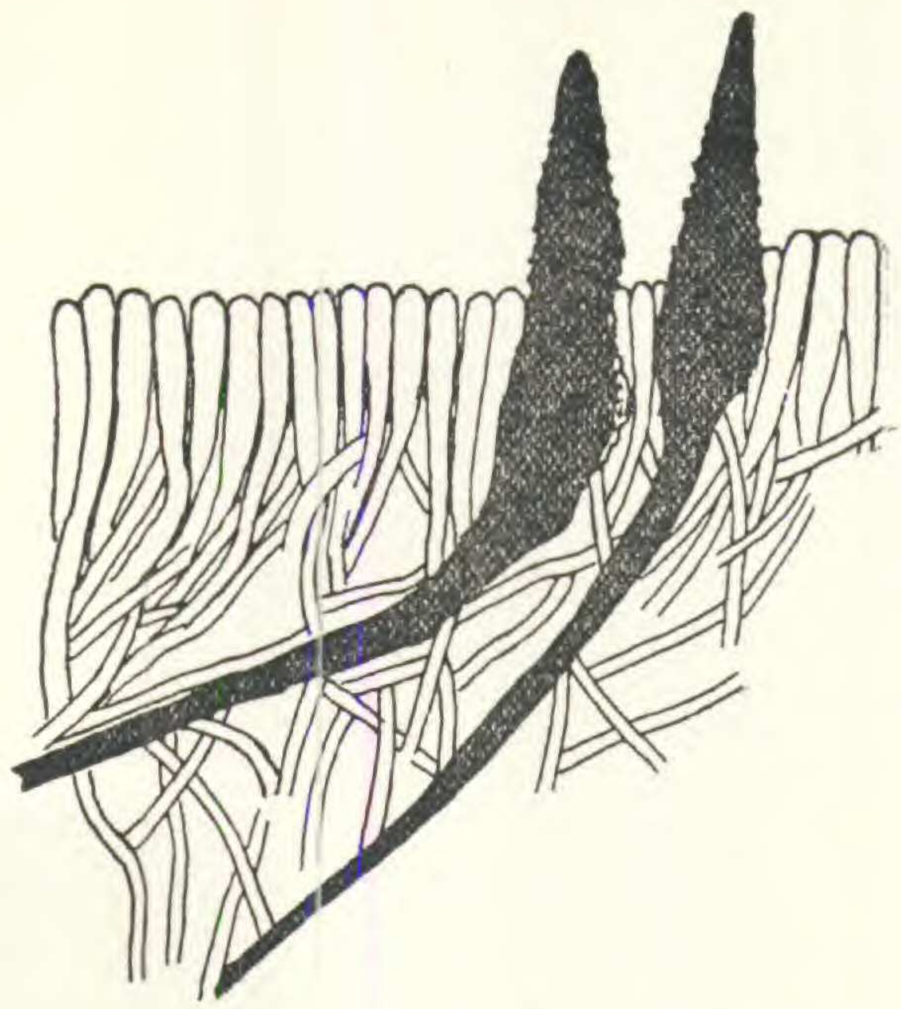


Fig. 31. *S. umbrinum*. Section of hymenial region × 488, showing *z*, cystidia.

Resupinate on areas 1–3 cm. in diameter, becoming laterally confluent for 10–15 cm., reflexed portion 2–5 mm. broad.

On fallen limbs of oak, hickory, and other frondose species. North Carolina to Texas and southward from Ohio and Illinois, in Arizona, West Indies, and Central America; occurs also in Poland, Cochin China, and Australia. September to February, but collected occasionally in the other months of the year.

S. umbrinum may be recognized by the purple color of young specimens which fades or changes finally to snuff-brown, although usually showing a vinaceous tinge, and by its remarkable cystidia, which, on account of their color and lack of conspicuous incrustation, verge towards setae. However, these organs are paler colored and much more elongated than undoubted setae; furthermore, sections of fructifications in which these colored cystidia are present do not immediately darken when dilute potassium hydrate is brought in contact with them, as invariably happens to sections containing true setae. It has seemed best to retain for this species the name *Stereum umbrinum* B. & C., because the type of *Stereum umbrinum* Fr., Herb. Preiss., No. 2686, collected in Australia on *Banksia Menziesii*, must be found and studied to complete the Friesian description before it can be known whether the Preiss specimen is not really a *Hymenochaete*, *Eichleriella*, *Auricularia*, or, perhaps, even identical with *S. umbrinum* B. & C., a common species in Australia. The presence of a white, intermediate layer seems to preclude the

latter possibility. No. 2686 has not been found in the Preiss series of specimens in the Missouri Botanical Garden Herbarium; perhaps it is most likely to be found in the Stockholm collection.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 606 b, under the name *Stereum papyrinum*, and 1108; Ell. & Ev., N. Am. Fungi, 2315; Ravenel, Fungi Car. **2:** 36, under the name *S. papyrinum;* Ravenel, Fungi Am., 118, under the name *S. papyrinum*, the type distribution of *Peniophora intermedia*, and 445, and 717, the type distribution of *Hymenochaete scabriseta;* Rabenhorst, Fungi Eur., 3524; de Thümen, Myc. Univ., 1504, under the name *Corticium murinum*, the type distribution of *Hymenochaete Kalchbrenneri.*

North Carolina: Asheville, *E. Bartholomew, 5653* (in Mo. Bot. Gard. Herb., 44215); Creedmoor, *J. G. Hall,* comm. by Lloyd Herb., 10299 (in Mo. Bot. Gard. Herb., 55465).

South Carolina: *H. W. Ravenel,* Curtis Herb., 1903, type (in Kew Herb.), and in Ravenel, Fungi Car. **2:** 36; Aiken, *H. W. Ravenel,* in Ravenel, Fungi Am., 445, and *H. W. Ravenel, 1716* (in Curtis Herb., 2308, under the name *Hymenochaete cervina*); Clemson College, *P. H. Rolfs, 1615, 1633.*

Georgia: Darien, *H. W. Ravenel,* in Ravenel, Fungi Am., 117; Tallulah Falls, *A. B. Seymour,* comm. by W. G. Farlow, GG.

Florida: *C. G. Lloyd, 2134, 4857,* and *W. W. Calkins,* in Ellis, N. Am. Fungi, 606 b; Eustis, *R. Thaxter, 12* (in Farlow Herb. and Mo. Bot. Gard. Herb., 43931); Gainesville, *N. L. T. Nelson,* comm. by Lloyd Herb., 427 (in Mo. Bot. Gard. Herb., 55624), and *H. W. Ravenel,* in Ravenel, Fungi Am., 118; Green Cove Springs, *G. Martin,* in Ellis, N. Am. Fungi, 1108; New Smyrna, *C. G. Lloyd, 192, 2122, 2134.*

Alabama: *Peters, 770* (in Curtis Herb., under the name *S. papyrinum*); Auburn, *P. H. Mell* (in U. S. Dept. Agr. Herb. and Mo. Bot. Gard. Herb., 5106); Mobile, *E. Bartholomew, 5751* (in Mo. Bot. Gard. Herb., 44221); Montgomery, *R. P. Burke, 139, 150* (in Mo. Bot. Gard. Herb., 21228, 44906); Talapoosa region, *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56598).

Louisiana: *A. B. Langlois*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44650); St. Martinville, *A. B. Langlois, A, B, C, ag*, and an *unnumbered specimen*, and in Ell. & Ev., N. Am. Fungi, 2315.

Ohio: *A. P. Morgan, 11*, type of *Hymenochaete purpurea* (in Kew Herb.); Cincinnati, *C. G. Lloyd, 190*, and *A. P. Morgan*, comm. by Lloyd Herb., 2626; Linwood, *C. G. Lloyd, 2261*.

Indiana: Greenwood, *M. C. Jensen*, comm. by C. J. Humphrey, 2133 (in Mo. Bot. Gard. Herb., 22825).

Illinois: Christopher, *C. J. Humphrey, 2133* (in Mo. Bot. Gard. Herb., 42926); Genesee, *E. T. & S. A. Harper, 824*.

Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 56716); Columbia, *B. M. Duggar, 571;* Pacific, *L. O. Overholts, 3162* (in Mo. Bot. Gard. Herb., 5718); Perryville, *C. H. Demetrio*, in Rabenhorst, Fungi Eur., 3524; Pickering, *E. Bartholomew, 6424* (in Mo. Bot. Gard. Herb., 55194); St. Louis, *N. M. Glatfelter, 1187*, comm. by N. Y. Bot. Gard. Herb.; Valley Park, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44056, 44061).

Arkansas: Bigflat, *W. H. Long, 19858, 19895* (in Mo. Bot. Gard. Herb., 8965, 8883); Cass, *W. H. Long, 19832, 19905* (in Mo. Bot. Gard. Herb., 8884, 8885); Womble, *W. H. Long, 19821* in part, *19869* (in Mo. Bot. Gard. Herb., 14650, 9142).

Texas: Gillespie Co., *C. Jermy, 444* (in Mo. Bot. Gard. Herb., 5171); Gonzales, *C. L. Shear, 1229*.

Arizona: 34 near Camp Lowell, *C. G. Pringle*, type of *Hymenochaete multispinulosa* (in N. Y. State Mus. Herb. and a portion in Burt Herb.).

Cuba: *C. Wright*, Fungi Cubenses Wrightiani, 832, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43908), and *C. G. Lloyd, 165* (in Mo. Bot. Gard. Herb., 55153); Ciego de Avila, *Earle & Murrill, 607*, comm. by N. Y. Bot. Gard. Herb.; La Magdalena, *Earle & Baker, 2470*, comm. by N. Y. Bot. Gard. Herb.; San Diego de Los Baños, *Earle & Murrill, 263*, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson, 2389* (in Mo. Bot. Gard. Herb., 9441).

Guatemala: Secanquim, *W. R. Maxon & R. Hay, 3140a*

Cochin China: authentic specimen of *Thelephora crassa* from Léveillé (in Kew Herb.).

Australia: *W. N. Cheesman*, comm. by E. M. Wakefield, Kew Herb. (in Mo. Bot. Gard. Herb., 44582); Victoria, *J. G. Luehmann*, in de Thümen, Myc. Univ., 1504, under the name of *Corticium murinum*, the type distribution of *Hymenochaete Kalchbrenneri*.

60. S. papyrinum Montagne in Ramon de la Sagra, Hist. Cuba Pl. Cell. 374. 1842; *ibid.*, folio ed., **9:** 228. 1845; Syll. Crypt. 178. 1856; Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 331. 1868. Plate 6, fig. 60.

Peniophora papyrina (Mont.) Cooke, Grevillea **8:** 20. *pl. 124. f. 9.* 1879; Sacc. Syll. Fung. **6:** 641. 1888; Massee, Linn. Soc. Bot. Jour. **25:** 140. 1889.—*Stereum nicaraguense* Berk. & Curtis, Am. Acad. Arts & Sci. Proc. **4:** 123. 1853; Sacc. Syll. Fung. **6:** 567. 1888.—*S. nicaraguae* Berk. & Curtis in Massee, Linn. Soc. Bot. Jour. **27:** 183. 1890.—An *Hymenochaete pallida* Cooke & Massee, Linn. Soc. Bot. Jour. **27:** 97. 1890? See Patouillard, Myc. Soc. Fr. Bul. **10:** 78. 1894, and Burt, Ann. Mo. Bot. Gard. **5:** 367. 1918.

Illustrations: Cooke, Grevillea **8:** *pl. 124. f. 9;* Australian Fungi, *pl. 11. f. 82.*

Type: in Kew Herb.

Fructification coriaceous-papery, thin, pliant, resupinate and widely effused, sometimes reflexed, rarely umbonate sessile, the upper side tomentose, concentrically sulcate, drying snuff-brown, weathering to cartridge-buff, the margin entire; hymenium even, velvety, snuff-brown to Benzo-brown; in structure 500–600 μ thick exclusive of the tomentose covering, composed of longitudinally and loosely interwoven, even-walled, pale-colored hyphae 3–3$\frac{1}{2}$ μ in diameter, which give their color to the fructification, the intermediate layer not dense on its upper side but grading into the

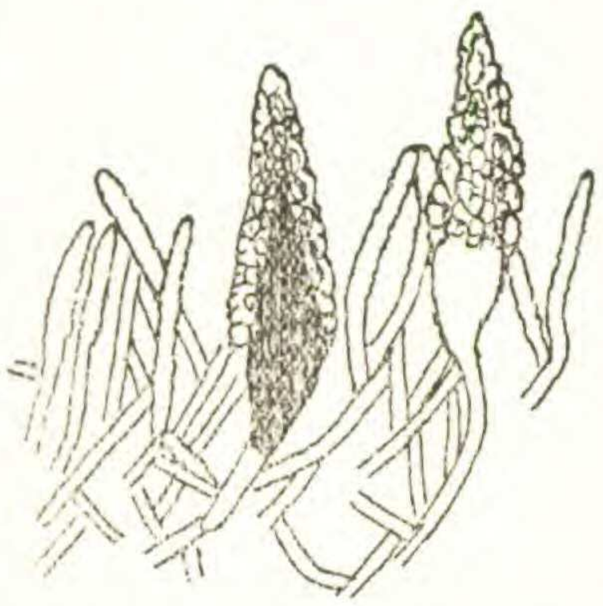


Fig. 32. *S. papyrinum.* Section of hymenium × 488, showing cystidia and paraphyses. From authentic specimen.

tomentum; no conducting organs present; cystidia rather few and scattered, heavily and coarsely incrusted on the peripheral half, conical, 30–75×12–25 μ, usually colored under the incrustation, confined to the hymenium; slender, flexuous paraphyses $2\frac{1}{2}$ μ in diameter are abundant in the hymenium; spores hyaline, even, $4\frac{1}{2}$–8×3–4 μ —but few found.

Resupinate on under side of limbs over areas up to 25×$3\frac{1}{2}$ cm., and reflexed along both sides 1–$2\frac{1}{2}$ cm.

On under side of fallen limbs of frondose species. Florida, West Indies, Mexico, Colombia, and Brazil. October to May. Probably common.

S. papyrinum belongs in the group with *S. umbrinum* and *S. albo-badium;* resupinate specimens of these species require examination of sectional preparations for accurate determination. The specimens which have been distributed by Ravenel and by Ellis in their exsiccati as *S. papyrinum* are *S. umbrinum*. In its reflexed stage, *S. papyrinum* is much more broadly reflexed than *S. umbrinum* and is concentrically sulcate; its cystidia are heavily incrusted and from 12 to 25 μ in diameter by 30 to 75 μ long, while those of *S. umbrinum* are much longer in proportion to their diameter and often can be followed from deep in the subhymenium, taper so gradually and bear so little incrustation, and are so uniformly colored that some mycologists have regarded them as setae, although they do not satisfy the definition of setae. The cystidia of *S. papyrinum* are concolorous with the hyphae under the incrustation. *S. albo-badium* has cystidia heavily incrusted but smaller than those of *S. papyrinum* and not colored.

On account of their structure, I have included in *S. papyrinum* the Cuban specimens listed by Berkeley & Curtis as *S. membranaceum*, for I find nothing to show that these specimens were ever compared with the type of the latter in Herb. Willdenow and collected on the Isle of Bourbon in the Indian Ocean; there is nothing in the original description of *S. membranaceum* to show that this may not be more closely related to *S. fasciatum* than to *S. papyrinum*. I have referred to *S. papyrinum*, as umbonate-sessile forms, the specimen from Nicaragua distributed in Smith, Central Am. Fungi, 94, and a collection from Cuba by Underwood & Earle, 1584, which are cited below; these speci-

mens have cystidia of the minimum dimensions given for the species and with less than the usual incrustation, as is the case with cystidia of the type of *S. nicaraguense;* perhaps these two specimens are *Hymenochaete pallida*.

Specimens examined:

Exsiccati: Smith, Central Am. Fungi, 95 and 93 a and b, under the name *Stereum rufo-fulvum* (Mont.), and 94, under the name *S. purpureum*.

Florida: Adams Key, Dade Co., *J. H. Small & C. A. Mosier, 5364*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 71448); Miami, *W. H. Long, 18310* (in Mo. Bot. Gard. Herb., 55442); Palm Beach, *R. Thaxter, 16* (in Mo. Bot. Gard. Herb., 43927).

Cuba: type, from Montagne (in Kew Herb.), and *C. Wright, 274*, and *240*, both under the name *S. membranaceum* (both in Curtis Herb.); Alto Cedro, *L. M. Underwood & F. S. Earle, 1481, 1492, 1584*, comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey, 2726* (in Mo. Bot. Gard. Herb.); El Yunque Mt., Baracoa, *L. M. Underwood & F. S. Earle, 364* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56714), and *739, 745*, and *1233*, comm. by N. Y. Bot. Gard. Herb.; Managua, *Earle & Murrill, 32*, comm. by N. Y. Bot. Gard. Herb.; San Diego de los Baños, *Earle & Murrill, 264, 356, 362, 367, 380*, all comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Espinosa, *J. A. Stevenson, 2751* (in Mo. Bot. Gard. Herb., 5554).

Jamaica: *A. E. Wight*, comm. by W. G. Farlow; Hope Gardens, *F. S. Earle, 141, 165, 431, 494*, all comm. by N. Y. Bot. Gard. Herb.; Port Maria, *F. S. Earle, 467*, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. Murrill & W. Harris, 898*, comm. by N. Y. Bot. Gard. Herb.; Westmoreland, *F. S. Earle, 425A*, comm. by N. Y. Bot. Gard. Herb.; San Juan, *F. S. Earle, 62*, comm. by N. Y. Bot. Gard. Herb.

Mexico: Colima, *W. A. & E. L. Murrill, 637, 648*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54583, 54584); Jalapa, *C. L. Smith*, in Smith, Central Am. Fungi, 93a; Orizaba, *W. A. & E. L. Murrill, 748*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54655).

Nicaragua: *C. Wright, 264,* type of *S. nicaraguense* (in Curtis Herb.); Castillo Viejo, *C. L. Smith,* in Smith, Central Am. Fungi, 95; Ometepe, *C. L. Smith,* in Smith, Central Am. Fungi, 93b; San Juan del Norte, *C. L. Smith,* in Smith, Central Am. Fungi, 94.

Canal Zone: Gatun, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56715).

Colombia: Bonda, *C. F. Baker, 26.*

Brazil: Santo Anna da Chapada, Matto Grosso, *G. O. Malme, 564,* comm. by L. Romell.

61. S. Earlei Burt, n. sp. Plate 6, fig. 61.

Type: in Burt Herb. and N. Y. Bot. Gard. Herb.

Fructification coriaceous-spongy, dry, effuso-reflexed, with the upper surface tomentose, snuff-brown, the margin entire; hymenium mouse-gray and somewhat pruinose in the older portion, snuff-brown and veined toward the margin; in structure with the intermediate layer 150 μ thick, composed of longitudinally interwoven, colored hyphae 3–4 μ in diameter, with the hymenial layer up to 200 μ thick, zoned, containing cystidia in all its portions; cystidia colored, heavily hyaline incrusted on the outer half, slender-pointed, 45–60 $\times$5–12 μ, protruding up to 30 μ; spores hyaline, even, 5–6$\times$3–3$\frac{1}{2}$ μ.

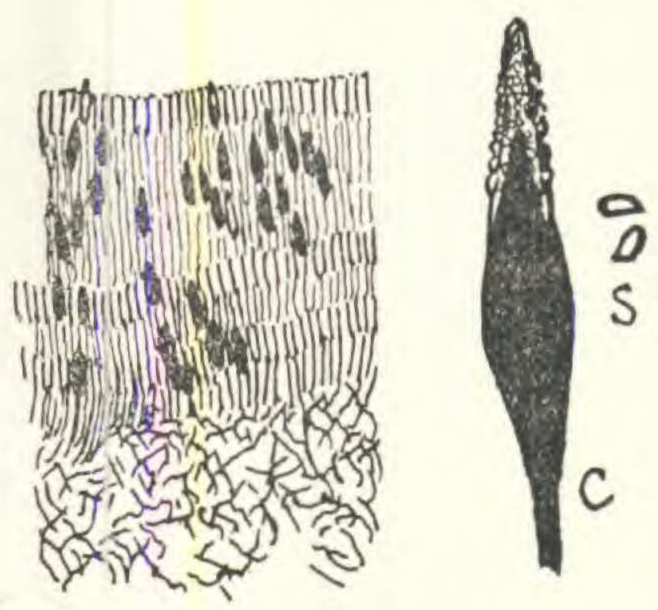


Fig. 33. *S. Earlei.* Section of type $\times$ 68; cystidium, *c*, and spores, *s*, $\times$ 488.

Reflexed portion up to 1 cm. broad; resupinate portion laterally confluent for 8 cm., but a strip only 1 cm. wide removed from the substratum.

In a wood pile. Hope Gardens, Jamaica. November.

Fructifications of this species have the general aspect of those of *S. papyrinum,* but are thinner, more compactly interwoven, with slenderer cystidia, and have the hymenial layer up to 200 μ thick and composed of several zones; cystidia are present in each of these zones, and those of the innermost zones do not reach to the surface of the hymenium. In *S. papyrinum*

the hymenium is a single layer of basidia, cystidia, and paraphyses. In the collector's note, the color is given as "violet purple edged with white," but colors of dried specimens are as given above.

Specimens examined:

Jamaica: Hope Gardens, *F. S. Earle, 151*, type, comm. by N. Y. Bot. Gard. Herb.

62. S. Chailletii Persoon, Myc. Eur. **1**: 125. 1822 (in *******Stereum* of *Thelephora*); Fries, Epicr. 551. 1838; Hym. Eur. 642. 1874; Sacc. Syll. Fung. **6**: 566. 1888; Bresadola, I. R. Accad. Agiati Atti III. **3**: 106. 1897. Plate 6, fig. 62.

Thelephora Chailletii Pers. in Fries, Elenchus Fung. **1**: 188. 1828.—*Xerocarpus ambiguus* Karsten, Soc. pro Fauna et Flora Fennica Actis **2**[1]: 38. 1881.—*Trichocarpus ambiguus* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 407. 1889.—*Hymenochaete ambigua* Karsten in Sacc. Syll. Fung. **9**: 230. 1891.—*Peniophora Atkinsonii* Ellis & Everhart, Phila. Acad. Nat. Sci. Proc. **1894**: 324. 1894; Sacc. Syll. Fung. **11**: 129. 1895.

Fructification coriaceous, nearly always resupinate, effused, occasionally reflexed, with upper surface tomentose, more or less concentrically sulcate when well developed, hair-brown to clove-brown, the margin entire; hymenium rather uneven, not polished, avellaneous to wood-brown; in structure 300–600 μ thick, composed of somewhat longitudinally and not densely interwoven hyphae 3–4$\frac{1}{2}$ μ in diameter, some of which are hyaline, thin-walled, and with deeply staining protoplasm, and many thick-walled, stiff, giving their color to the fructification, and curving into the hymenium where they terminate in cystidia; cystidia slightly colored, roughened above, 50–120×4–4$\frac{1}{2}$ μ, protruding up to 20 μ, slender-pointed; spores white in spore collection, ellipsoidal, 5–6×3–3$\frac{1}{2}$ μ.

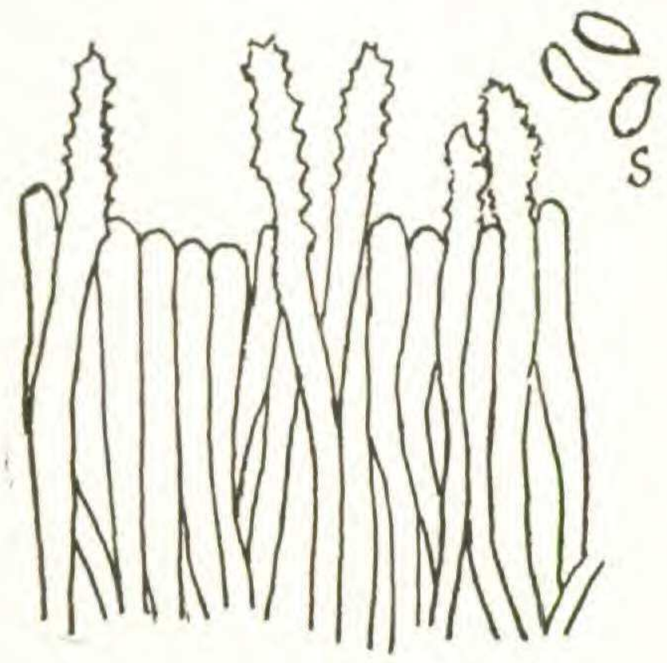


Fig. 34. *S. Chailletii*. Section of hymenium × 665, showing paraphyses; spores, *s*.

Wholly resupinate specimens $\frac{1}{2}$–2 cm. in diameter, becoming laterally confluent over areas up to 15×2 cm.; reflexed portions 1–5 mm. broad—up to 2 cm. broad in European specimens.

On dead *Tsuga*, *Pseudotsuga*, *Abies*, *Picea*, *Larix*, *Thuja*, and *Cupressus*. Canada to New Jersey, in Wisconsin, in Idaho to British Columbia and Washington, and in New Mexico at altitude 7500 ft. Occurs also in Europe. Probably throughout the year but most collections dated July to October. Infrequent.

S. Chailletii occurs just often enough reflexed so that an observant collector will soon locate his gatherings correctly in *Stereum*. It is noteworthy by its colored cystidia of the same type as those of *S. umbrinum* but of only half the diameter of those of the latter, and by its occurrence on conifers of the species named above, and by restriction in geographic range to the northern United States and southern Canada and the Rocky Mountain plateau. The avellaneous, somewhat velvety hymenium is so uniform in appearance that when once learned this species may usually be recognized thereafter at sight.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2904, under the name *Hymenochaete simulans* Ell. & Ev., n. sp., but description does not seem to have been published; Krieger, Fungi Sax., 1202.

Norway: Christiania, *M. N. Blytt*, determined by E. Fries (in Herb. Fries).

Finland: Merimason, *P. A. Karsten*, authentic specimen of *Trichocarpus ambiguus*.

Sweden: Stockholm, *L. Romell, 24, 25, 341*, all under the name *Stereum abietinum*.

France: Arnac, Aveyron, *A. Galzin, unnumbered spec.* and *17948*, comm. by H. Bourdot, 7926, and unnumbered respectively.

Switzerland: Sachs, *W. Krieger*, in Krieger, Fungi Sax., 1202.

Italy? or perhaps Hungary?: locality not given, *G. Bresadola*.

Canada: Cow's Swamp, *J. Macoun, 115;* Dow's Swamp, *J. Macoun, 249* in part.

Ontario: Ottawa, *J. Macoun, 57*.

Vermont: Ripton, *E. A. Burt*, two collections.

New York: Beaver River, Adirondack Mts., *G. F. Atkinson*, Bot. Dept. of Cornell Univ., 4607; Ithaca, *G. F. Atkinson, 14189;* Syracuse, *G. F. Atkinson, 677*, part of type of *Peniophora Atkinsonii*.

New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., N. Am. Fungi, 2904.

Wisconsin: *M. C. Jensen*, comm. by C. J. Humphrey, 2502 (in Mo. Bot. Gard. Herb., 5060).

Idaho: Coolin, *J. R. Weir*, *11133*, *11527*, *11940* (in Mo. Bot. Gard. Herb., 56717, 56722, 56718); Kaniksu National Forest, Priest River, *J. R. Weir*, *65*, *110* (the latter in Mo. Bot. Gard. Herb., 13272).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, *482*, *510*, *513* (in Mo. Bot. Gard. Herb., 18282, 3771, 1739); Sidney, *J. Macoun*, *81* (in Mo. Bot. Gard. Herb., 5887); Squamish, *J. Macoun*, *533* (in Mo. Bot. Gard. Herb., 55186).

Washington: Bellingham, *J. R. Weir*, *7559* (in Mo. Bot. Gard. Herb., 55467, 55790); Stanwood, *C. J. Humphrey*, *7358* (in Mo. Bot. Gard. Herb., 20103).

New Mexico: Tejano Experiment Station, near Albuquerque, *W. H. Long & P. W. Seay*, comm. by W. H. Long, 21313 (in Mo. Bot. Gard. Herb., 54884).

63. S. ferreum Berk. & Curtis, Linn. Soc. Bot. Jour. **10:** 332. 1868; Sacc. Syll. Fung. **6:** 586. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 197. 1890. Plate 6, fig. 63.

An *Stereum areolatum* Fries?

Type: in Kew Herb. and Curtis Herb.

Fructifications corky, effused, usually resupinate, sometimes becoming barely reflexed on the upper side and there drab, nearly even; hymenium somewhat colliculose, not shining, cinnamon-drab to drab; in structure up to 1100 μ thick, with the intermediate layer 500 μ thick, bordered by a darker zone next to substratum and composed of colored, thick-walled, somewhat ascending, interwoven hyphae 3–3½ μ in diameter; hymenial layer up to 600 μ thick, containing in all parts innumerable incrusted cystidia, minutely rough, either colored throughout or colored under the incrustation, 20–25×5–7 μ, protruding up to 6 μ; spores hyaline, even, globose, 4 μ in diameter, but few found.

Fig. 35. *S. ferreum*. Section of hymenial region of type, × 488. Shows rough, colored cystidia.

Fructifications 4–8×1–2 cm., margin reflexed 1 mm.

On bark of fibrous structure of an unrecorded species. Cuba and Jamaica. Rare.

S. ferreum may be recognized by its resupinate, drab fructifications, rarely having a narrowly pileate margin, and by the thick hymenial layer containing innumerable small colored cystidia which at the surface of the hymenium have the colorless incrustation roughened. So few spores were observed that it may be they were foreign spores. *S. ferreum* is at least closely related to *S. areolatum*, a European species occurring on *Taxus*, and I have been inclined to regard it as not specifically distinct from the latter, but we do not know yet that *S. ferreum* occurs on *Taxus* or a related genus; if not a strictly tropical species but a synonym of *S. areolatum*, the lack of a northern range in eastern United States is at variance with species common to Europe and North America.

Specimens examined:

Cuba: *C. Wright, 199*, type (in Kew Herb.).

Jamaica: Cinchona, *W. A. & E. L. Murrill, 458*, comm. by N. Y. Bot. Gard. Herb.; Sir John Peak, *W. A. Murrill, 803*, comm. by N. Y. Bot. Gard. Herb.

64. S. cinerascens (Schw.) Massee, Linn. Soc. Bot. Jour. **27:** 179. 1890. Plate 6, fig. 64.

Thelephora cinerascens Schweinitz, Am. Phil. Soc. Trans. N. S. **4:** 167. 1832.—*Hymenochaete cinerascens* (Schw.) Léveillé, Ann. Sci. Nat. Bot. III. **5:** 152. 1846; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10:**197. 1888.—*Peniophora cinerescens* (Schw.) Sacc. in Sacc. Syll. Fung. **6:** 646. 1888.—*P. Schweinitzii* Massee, Linn. Soc. Bot. Jour. **25:** 145. 1889.—*Corticium aschistum* Berkeley & Curtis, Am. Acad. Arts & Sci. Proc. **4:** 123. 1858.—*Peniophora Berkeleyi* Cooke, Grevillea **8:** 20. *pl. 122. f. 4.* 1879; Sacc. Syll. Fung. **6:** 642. 1888; Massee, Linn. Soc. Bot. Jour. **25:** 144. 1889.—*Stereum moricola* Berkeley, Grevillea **1:** 162. 1873; Sacc. Syll. Fung. **6:** 567. 1888.—*Peniophora moricola* (Berk.) Massee, Linn. Soc. Bot. Jour. **25:** 141. 1889.—*Stereum dissitum* Berkeley, Grevillea **1:** 164. 1873.—*Peniophora dissita* (Berk.) Cooke, Grevillea **8:** 150. 1880; Sacc. Syll. Fung. **6:** 645. 1888; Massee, Linn. Soc.

Bot. Jour. **25**: 143. 1889.—*Corticium ephebium* Berk. & Curtis, Grevillea **1**: 178. 1873; Sacc. Syll. Fung. **6**: 618. 1888.—*Peniophora ephebia* (Berk. & Curtis) Massee, Linn. Soc. Bot. Jour. **25**: 151. 1889.—*Stereum neglectum* Peck, N. Y. State Mus. Rept. **33**: 22. 1880.—*Peniophora neglecta* Peck, N. Y. State Mus. Rept. **40**: 76. 1887.—*P. occidentalis* Ellis & Everhart, Torr. Bot. Club Bul. **24**: 277. 1897; Sacc. Syll. Fung. **14**: 224. 1900.—*Lloydella occidentalis* (Ell. & Ev.) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **116**: 791. 1907. —*Stereum purpurascene* Lloyd, Myc. Writ. **4**. Letter 53: 14. 1914.

Illustrations: Cooke, Grevillea **8**: *pl. 122. f. 4.* 1879.

Type: in Herb. Schweinitz, Curtis Herb., and Kew Herb.

Fructifications coriaceous, often resupinate and effused, sometimes reflexed, with upper surface strigose-hairy, concentrically sulcate, warm buff to pinkish buff, weathering gray, often laterally confluent, the margin entire; hymenium minutely bristly with the cystidia, even, drying pinkish buff to drab; in structure 400–600 μ thick excluding the hairy covering, with the intermediate layer composed of longitudinally interwoven, thick-walled hyphae 4–4½ μ in diameter; cystidia large, incrusted, thick-walled, often brownish at the base, conical, 100–150×12–20 μ, emerging up to 40–70 μ; spores white in spore collection, even, 10–12×6 μ, somewhat flattened on one side.

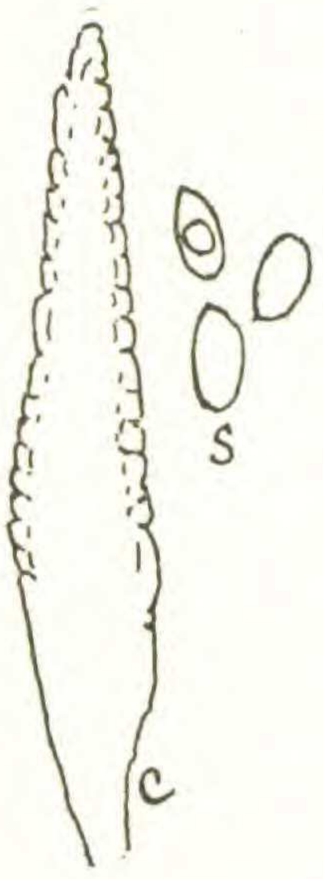


Fig. 36. *S. cinerascens.* Cystidium, *c*, and spores, *s*, × 488.

Resupinate portions 1–10×1–2½ cm.; reflexed margin 2–8 mm. broad.

On logs and fallen limbs of *Ulmus*, *Tilia*, *Robinia*, *Morus*, etc. Canada to Texas, westward to California, and in Mexico, Cuba, and Brazil. Common. June to February.

Fully developed specimens of *S. cinerascens* may be recognized by their narrowly reflexed, strigose-hairy pileus and hymenium somewhat pruinose with the large, bristly, colorless cystidia. In sectional preparations, these cystidia are usually slightly colored at the base and more numerous and larger than in any other North American *Stereum*; the spores are very large also.

Wholly resupinate specimens have merely a superficial resemblance to *Peniophora*, for they are loosely attached to the substratum by the layer of loosely arranged, coarse hairs which forms the strigose covering of the upper surface of a reflexed specimen; the intermediate layer is well developed in resupinate specimens, and the cystidia and spores are the same as in reflexed specimens. It is surprising that a species so common and so marked in its microscopical characters should have seemed new so many times.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2337, 4648; Ell. & Ev., N. Am. Fungi, 2314, type distribution of *Peniophora occidentalis;* Shear, N. Y. Fungi, 313.

Canada: *J. Macoun, 45, 68,* and another specimen comm. by J. B. Ellis, under the name *Peniophora occidentalis;* Lower St. Lawrence valley, *J. Macoun, 33, 34, 79.*

Quebec: Hull, *J. Macoun,* Nat. Hist. Surv. of Canada, 359, and *J. Macoun, 52;* Ironsides, *J. Macoun, 282.*

Ontario: Guelph, *J. H. Faull,* Univ. Toronto Herb., 669 (in Mo. Bot. Gard. Herb., 44916); Jefferson, *G. H. Graham,* Univ. Toronto Herb., 673 (in Mo. Bot. Gard. Herb., 44922); Ottawa, *J. Macoun, 234;* Toronto, *J. H. Faull,* Univ. Toronto Herb., 651 (in Mo. Bot. Gard. Herb., 44947).

Vermont: Middlebury, *E. A. Burt,* six collections.

Massachusetts: *W. G. Farlow,* two collections.

New York: Alcove, *C. L. Shear, 1312,* and in Shear, N. Y. Fungi, 313; Cayuga Lake Basin, *G. F. Atkinson, 3020, 8023, J;* Greenbush, *C. H. Peck* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 56020); Ithaca, *C. J. Humphrey, 261,* and a specimen comm. by G. F. Atkinson, *Van Hook,* comm. by G. F. Atkinson, 7988; Knowersville, *C. H. Peck* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55755); Syracuse, *L. M. Underwood, 5* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56709); Verona, *C. H. Peck,* type of *Stereum neglectum* (in N. Y. State Mus. Herb., and perhaps a duplicate in Mo. Bot. Gard. Herb., 55754).

Pennsylvania: Bethlehem, *Schweinitz,* type (in Herb. Schweinitz, Curtis Herb., and Kew Herb.).

South Carolina: Curtis Herb., 5997, type of *Stereum moricola* (in Kew Herb.).

Georgia: Atlanta, *E. Bartholomew, 5694* (in Mo. Bot. Gard. Herb., 44220), and in Bartholomew, Fungi Col., 4648.
Florida: Cocoanut Grove, *R. Thaxter, 95* (in Mo. Bot. Gard. Herb., 43922); Miami, *W. H. Long, 12951* (in Mo. Bot. Gard. Herb., 55102); Totten Key, *P. H. Rolfs.*
Alabama: *Peters, 923*, type of *Corticium ephebium, 1004, 1007* (in Curtis Herb., 6050, 6088, and 6089 respectively, and in Kew Herb.).
Texas: *C. Wright*, Curtis Herb., 3903, type of *Stereum dissitum* (in Kew Herb., and probably a co-type in Burt Herb., and U. S. Dept. Agr. Herb.).
Michigan: Ann Arbor, *C. H. Kauffman, 25;* New Richmond, *C. H. Kauffman, 64* (in Mo. Bot. Gard. Herb., 19651).
Ohio: Cincinnati, *A. P. Morgan*, comm. by Lloyd Herb., 2590, and *A. P. & S. V. Morgan*, comm. by U. S. Dept. Agr. Herb., under the name *Hymenochaete imbricatula* as determined by Morgan; Linwood, *C. G. Lloyd, 3553, 02835.*
Indiana: Hibernian Mills, *Whetzel & Reddick*, comm. by D. Reddick, 2.
Minnesota: Cass Lake, *J. R. Weir, 324* (in Mo. Bot. Gard. Herb., 6968); Clearwater Lake, *F. Weiss, 4* (in Mo. Bot. Gard. Herb., 56634); Wright Co., *F. Weiss* (in Overholts Herb., 5367).
Iowa: Webster, *O. M. Oleson, 437* (in Mo. Bot. Gard. Herb., 44060); Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6535 (in Mo. Bot. Gard. Herb., 14042).
Missouri: Creve Coeur, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5137); Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 56711).
Arkansas: Fordyce, *C. J. Humphrey, 5778.*
Nebraska: Lincoln, *C. L. Shear, 1052;* Pawnee City, *C. L. Shear, 1016.*
Kansas: Louisville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2337; Rooks Co., *E. Bartholomew* (in Burt Herb. and Mo. Bot. Gard. Herb., 5011).
Montana: *F. W. Anderson*, in Ell. & Ev., N. Am. Fungi, 2314.
California: Bear Valley, near Olema, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56591); Berkeley,

H. A. Lee, comm. by W. A. Setchell, 1020 (in Mo. Bot. Gard. Herb., 44304).

Mexico: Xuchiles, near Cordoba, *W. A. & E. L. Murrill, 1181, 1213*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54590, 54591).

Nicaragua: *C. Wright, 274*, type of *Corticium aschistum* and *Peniophora Berkeleyi* (in Curtis Herb.).

Cuba: *C. G. Lloyd, 428* (in Mo. Bot. Gard. Herb., 55157); Alto Cedro, *Earle & Murrill, 515* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56291); Havana, *Bro. Leon*, comm. by J. R. Weir, 10188 (in Mo. Bot. Gard. Herb., 56216).

Jamaica: Chester Vale, *W. A. & E. L. Murrill, 343*, comm. by N. Y. Bot. Gard. Herb.

Brazil: Matto Grosso, Santa Anna da Chapada, *G. V. Malme, 572*, comm. by L. Romell.

65. S. magnisporum Burt, n. sp. Plate 6, fig. 65.

Type: in Burt Herb.

Fructifications coriaceous-gelatinous, thin, resupinate, becoming confluent, free all around, with margin reflexed on the upper side, probably white, drying pale pinkish buff, hoary, the margin white, entire; hymenium even or with one or two broad veins, setulose with the large cystidia, drying pinkish buff; in structure 300 μ thick when dry, swelling to 1200–1500 μ thick when wet for sectioning, of gelatinous consistency, composed of loosely interwoven, hyaline hyphae 2 μ in diameter, not incrusted; hymenial layer not zonate, composed of large simple basidia 45–60×15 μ, having 4 sterigmata 12 μ long, of hyaline, filiform, flexuous paraphyses 2–2$\frac{1}{2}$ μ in diameter, not exceeding the basidia, and of conical, incrusted cystidia 45–90×12–15 μ, protruding up to 60 μ; spores hyaline, even, 15–20×12–14 μ.

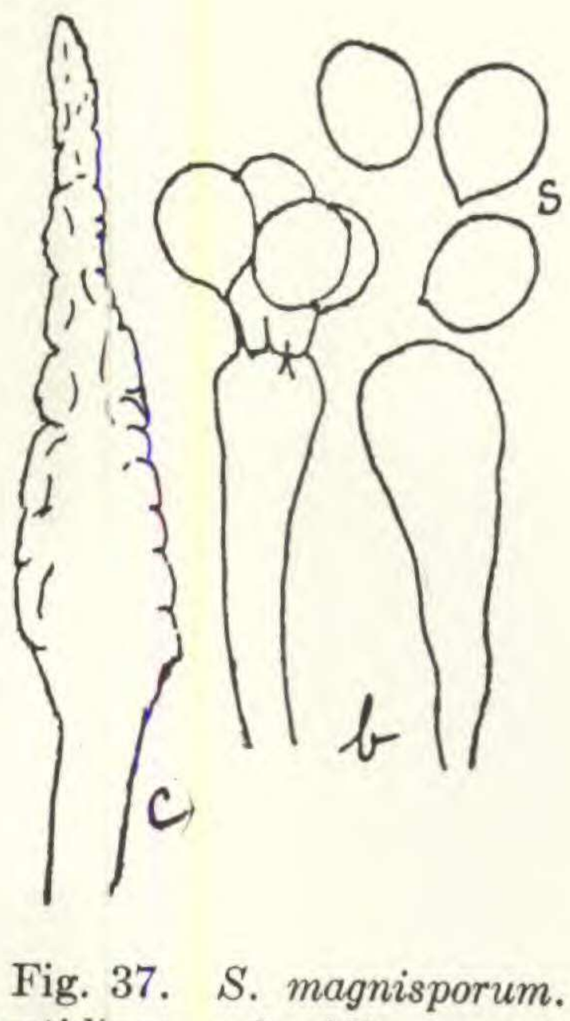


Fig. 37. *S. magnisporum*. Cystidium, *c*, basidia, *b*, and spores, *s*, × 488. From type.

Fructifications 2–6 mm. in diameter, laterally confluent for 15 mm., margin reflexed for 1–2 mm.

On dead limbs of a frondose species. Jamaica. December to January.

S. magnisporum may be recognized by its small, whitish fructifications, with narrowly reflexed or free margin, pale hymenium distinctly setulose with the large cystidia, and by the very large spores. The large spores and basidia show relation of *S. magnisporum* to *Aleurodiscus*, but the absence of granular matter or of any unusual character of the paraphyses leads to the belief that this species will usually be sought for among the Stereums.

Specimens examined:

Jamaica: Chester Vale, *W. A. & E. L. Murrill, 328*, type, comm. by N. Y. Bot. Gard. Herb.; Cinchona, *W. A. & E. L. Murrill, 522*, comm. by N. Y. Bot. Gard. Herb.

66. S. spumeum Burt, n. sp. Plate 6, fig. 66.

Corticium spumeum Berk. & Rav. in Curtis Herb. (in part); Grevillea **20:** 13. 1891 (in part—nomen).—*C. ochroleucum*, "as resupinate ambient condition," Berk. & Curtis, Grevillea **1:** 166. 1873, but not *Stereum ochroleucum* Fries.—Not *Corticium ochroleucum* var. *erimosum* Berk. & Curtis, Grevillea **1:** 166. 1873.

Type: in Burt Herb.

Fructifications spongy-soft, effused, resupinate, separable, sometimes narrowly reflexed, the upper surface tomentose and becoming cartridge-buff to pinkish buff in the herbarium, the margin entire; in structure 400–1500 μ thick, composed of loosely interwoven, hyaline, thick-walled hyphae 3–4½ μ in diameter, sometimes nodose-septate, the intermediate layer not bordered on its upper side by a crust-like or colored zone; hymenium even, cream-buff to pinkish buff; no conducting organs; cystidia incrusted, 36–60×9–12 μ, sometimes protruding up to 40 μ; spores hyaline, even, 5–9×3–4 μ.

Resupinate over areas 1–10×1–5 cm., reflexed portion 1–4 mm. broad when present.

On bark and wood of dead beech, oak, and other frondose limbs. New York to Mexico. August to January. Rare.

S. spumeum is noteworthy by its narrowly reflexed pileus, spongy-soft throughout, and without differentiation of its sur-

face of soft, matted, interwoven hairs from the hyphae of the intermediate region, by its buff hymenium, and by its incrusted cystidia. These incrusted cystidia and different aspect of the fructifications afford sharp separation from *S. ochraceo-flavum; S. ochroleucum* and *S. rugosiusculum* have the general aspect of *S. spumeum* but both lack incrusted cystidia, and *S. rugosiusculum* has in its subhymenial region pyriform, vesicular organs. *S. spumeum* is so frequently resupinate or very narrowly reflexed that gatherings are likely to be referred to *Peniophora.*

Specimens examined:

New York: Hudson Falls, *S. H. Burnham, 27* (in Mo. Bot. Gard. Herb., 54486).

Pennsylvania: *E. Michener, 1864* (in Curtis Herb., under the name *Corticium giganteum*).

South Carolina: Aiken, on oak limbs, *H. W. Ravenel, 1772* (in Curtis Herb., under the name *Corticium ochroleucum*, "formerly *C. spumeum*").

Louisiana: Baton Rouge, *Edgerton & Humphrey;* St. Martinville, *A. B. Langlois, E*, type

Mexico: Guernavaca, *W. A. & E. L. Murrill, 405, 413, 414, 498, 503, 520*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54520–54523, 56685, 55524); Cordoba, *W. A. & E. L. Murrill, 1214*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54592).

67. S. erumpens Burt, n. sp. Plate 6, fig. 67.

Type: in Burt Herb.

Fructifications corky, rarely resupinate, usually bursting out from the inner bark as small pezizaeform, orbicular disks or cups with elevated black margins and cinereous or pallid neutral gray hymenium; these fructifications may become crowded as if confluent, and then broken up into frustules and remain attached by the under side to the substratum, or the margin on the upper side may grow outward so as to form umbonate, sessile pilei attached by the umbo and lower side, with the upper surface narrowly concentrically sulcate, mummy-brown to fuscous; hy-

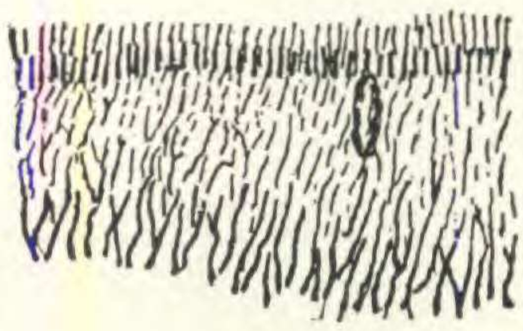


Fig. 38. *S. erumpens.* Section of type, × 90.

menium even or somewhat tubercular, pallid neutral gray; in structure 200–300 μ thick, composed of ascending, densely interwoven hyphae both colored and hyaline, the former $3\frac{1}{2}$ μ in diameter, with the tips arranged side by side in colored subhymenial zones, mark the 1–3 strata finally present; cystidia incrusted, cylindric, 30–60$\times$8–20 μ, sometimes protruding up to 20 μ beyond the hymenium, starting from all parts of the fructification; spores hyaline, even, 5–7$\times1\frac{1}{2}$–$2\frac{1}{2}$ μ.

Fructifications 1–$2\frac{1}{2}$ mm. in diameter, reflexed 1–2 mm.

On dead limbs of alder, chestnut, willow, and other frondose species. Rhode Island to Alabama and westward to Washington and Oregon. March to January. Occasional.

S. erumpens combines the characters of *S. versiforme* and *Peniophora cinerea;* it is more constantly and distinctly reflexed than *S. versiforme*, always has a gray hymenium, and has quite a different mode of origin from the latter. In the type small blackish bodies burst out from the bark, open at the tip, disclosing whitish hymenium, and then grow to mature condition. Specimens at hand do not show how such a large resupinate fructification as that collected by E. T. and S. A. Harper, No. 819, cited below, does arise, and I may be wrong in referring the specimen to *S. erumpens*. An important microscopical detail of *S. erumpens* is the narrow olivaceous zone of colored hyphal tips at the very base of the basidia of the hymenium.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 720, under the name *Corticium quercinum* var. *scutellatum*.

Rhode Island: Lincoln, *F. W. Collins*.

New York: East Galway, *E. A. Burt;* Ithaca, *C. J. Humphrey, 2568* (in Mo. Bot. Gard. Herb., 20784); Karner, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55210); New Scotland, *C. H. Peck* (in N. Y. State Mus. Herb., T 28, and Mo. Bot. Gard. Herb., 54658).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 720.

Maryland: Takoma Park, *C. L. Shear, 959*.

District of Columbia: North Takoma, *C. L. Shear, 1043*, type.

Georgia: Raleigh, *R. M. Harper, 2037b*, comm. by P. L. Ricker, and (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 42597).

Alabama: Auburn, *F. S. Earle, 2301* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56292).
Indiana: Scottsburg, *J. R. Weir, 5836* (in Mo. Bot. Gard. Herb., 55462).
Illinois: Glencoe, *E. T. & S. A. Harper, 819, 937.*
Arkansas: Fayetteville, *R. R. Rosen*, comm. by L. O. Overholts, 5117 (in Mo. Bot. Gard. Herb., 56358).
Montana: Missoula, *J. R. Weir, 354* (in Mo. Bot. Gard. Herb., 9435).
Washington: Brewerton, *E. Bartholomew*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 4939).
Oregon: Grants Pass, *J. R. Weir, 8701* (in Mo. Bot. Gard. Herb., 36742).

68. S. sulcatum Burt in Peck, N. Y. State Mus. Rept. **54:** 154. 1901; Lloyd, Myc. Writ. **5.** Notes 44: 619. *text f. 878.* 1917. Plate 6, fig. 68.

Illustrations: Lloyd, *loc. cit.*

Type: in Burt Herb., N. Y. State Mus. Herb., and Bresadola Herb.

Fructification corky, rigid, resupinate or effuso-reflexed, with the reflexed part becoming glabrous, bister, irregular, deeply and concentrically sulcate; hymenium uneven or somewhat tuberculate, not polished, drying between light buff and pinkish buff, assuming a reddish color where bruised; in structure 600–1500 μ thick, with the intermediate layer bordered by a dark dense zone on its upper side, and composed of very densely and longitudinally interwoven, hyaline hyphae 3–3½ μ in diameter, the hymenial layer becoming zonate or stratose; no colored conducting organs; cystidia incrusted, 30–50×8–12 μ; spores white in spore collection, even, subglobose, 4–6×3–5 μ.

Confluent over areas 3–15×1–8 cm.; reflexed margin 3–10 mm. broad.

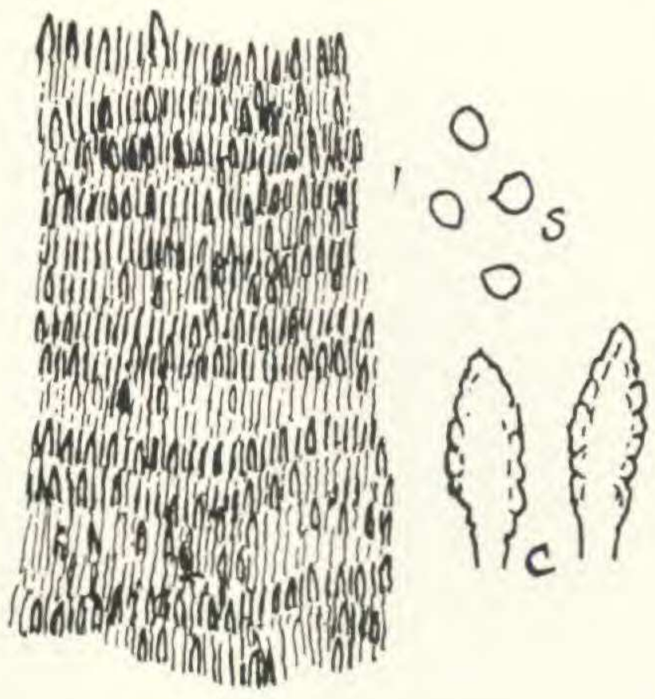


Fig. 39. *S. sulcatum.* Section of hymenial region × 90; cystidia, *c*, and spores, *s*, × 665.

On logs and stumps of *Tsuga*, *Abies*, *Picea*, *Taxodium*, *Pseudotsuga*, and *Larix*. Canada to Texas and westward to British Columbia and Washington. May to November. Frequent.

S. sulcatum may be recognized by its brown, deeply and sharply and concentrically sulcate pileus, ruddy hymenium, incrusted cystidia, and occurrence on conifers. Where the northern hemlock occurs it is usually on this species. *S. Chailletii* is found on conifers throughout the same northern geographical range, but is much thinner and does not have as large nor incrusted cystidia. In the older herbaria *S. sulcatum* is often found under the name *Stereum rugosum*, to which specimens were erroneously referred.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 1935, under the name *Stereum rugosum;* Ell. & Ev., Fungi Col., 217, under the name *S. rugosum.*

Canada: *J. Macoun, 27, 32, 43;* Lower St. Lawrence Valley, *J. Macoun, 69a, 76.*

Ontario: Ottawa, *J. Macoun, 234,* and in Ell. & Ev., N. Am. Fungi, 1935.

New Hampshire: North Conway, *L. O. Overholts & H. H. York,* comm. by L. O. Overholts, 5033 (in Mo. Bot. Gard. Herb., 56350).

New York: Floodwood, *E. A. Burt,* type; Ithaca, *G. F. Atkinson, 2023, 2617, 2636, 5072, 7889, 19398,* and *C. O. Smith,* comm. by G. F. Atkinson, 8032; North Elba, *C. H. Kauffman, 7* (in Mo. Bot. Gard. Herb., 21821); Pompey, *L. M. Underwood,* in Ell. & Ev., Fungi Col., 217.

Louisiana: Lutcher, *H. von Schrenk, 26* (in Mo. Bot. Gard. Herb., 42637).

Texas: Houston, *H. W. Ravenel, 113* (in U. S. Dept. Agr. Herb., under the herbarium name *Stereum tricolor*).

Wisconsin: Ladysmith, *C. J. Humphrey, 1908* (in Mo. Bot. Gard. Herb., 42917).

West Virginia: comm. by W. G. Farlow.

Tennessee: Elkmont, *C. H. Kauffman, 60* (in Mo. Bot. Gard. Herb., 16403).

Montana: Gallatin National Forest, Spring Hill, *G. G. Hedgcock,* comm. by C. J. Humphrey, 2164 (in Mo. Bot. Gard. Herb., 10399).

Idaho: Kaniksu National Forest, Priest River, *J. R. Weir*, *4*, *29*, *58*, *74*, *82*, and *102* (the last in Mo. Bot. Gard. Herb., 16029).
Canadian Rocky Mts.: Lake Louise, *J. Macoun*, *3;* Lake O'Hara, *J. Macoun*, *7;* Papiston Creek, *J. Macoun*, *8*.
British Columbia: Yoho Valley, *J. Macoun*, *5*.
Washington: Mt. Paddo, *W. N. Suksdorf*, *843*, *844*.
Oregon: Sumpter, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2570 (in Mo. Bot. Gard. Herb., 20460).

69. S. subpileatum Berk. & Curtis, Hooker's Jour. Bot. **1:** 238. 1849; Grevillea **1:** 163. 1873; Sacc. Syll. Fung. **6:** 585. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 192. 1890; Long, Jour. Agr. Res. **5:** 421. *pl. 41*. 1915. Plate 6, fig. 69.

Illustrations: Jour. Agr. Res. **5:** *pl. 41*.

Type: in Curtis Herb. and Kew Herb.

Fructifications thick, corky, drying rigid, very hard, resupinate or effuso-reflexed, sometimes laterally confluent and attached by the umbos, with upper surface concentrically sulcate, somewhat zonate, tomentose, cinnamon-brown, the margin entire; hymenium even, light buff; in structure 800–1200 μ thick, with the intermediate layer bordered and connected with the tomentum by a denser and darker crust and bearing on the opposite side a hymenial layer which becomes multizonate; hyphae of intermediate layer colored, thick-walled, stiff, 3–3½ μ in diameter, densely and longitudinally arranged; cystidia incrusted, cylindric, 30–36×7 μ, becoming colored where buried in older zones of the hymenium, at first sometimes slightly aculeate; spores hyaline, even, 4–5×3 μ.

Fructifications with reflexed portion 1–6 cm. broad.

Perennial on logs of several species of *Quercus* causing a pock-

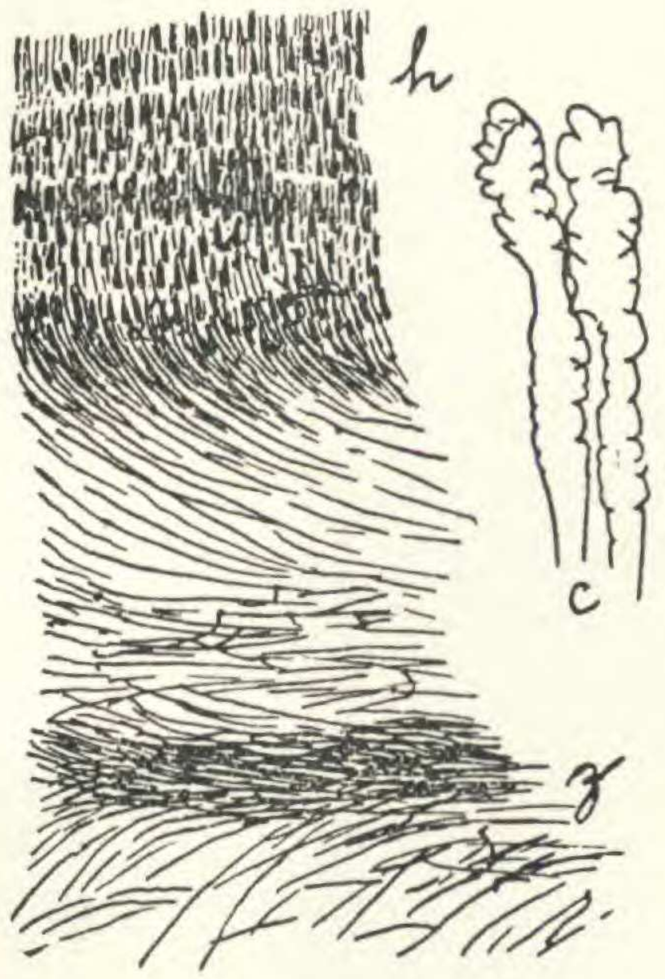


Fig. 40. *S. subpileatum*. Section × 68; hymenium, *h*, crust-like zone, *z*, cystidia of type, *c*, × 488.

eted or honeycomb heart rot. North Carolina and Ohio to Mexico, and in Cuba.

In general aspect *S. subpileatum* is not distinguishable from *S. sepium* and *S. insigne;* it is more commonly met with than these latter species and with them occurs on oak logs, is also tobacco-colored and sulcate above and has a whitish hymenium which differs from the other species of this group by containing cylindric, incrusted cystidia and only very rarely an occasional paraphysis with its outer portion of bottle-brush or aculeate form. Usually such paraphyses are not found in preparations of the hymenium of this species. Occasionally preparations may show young cystidia which are merely rough above or somewhat aculeate. One must not confuse *S. subpileatum* with the other species which have numerous and conspicuous bottle-brush paraphyses.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 917; Ravenel, Fungi Am., 219; Ravenel, Fungi Car. 1: 30; Smith, Cent. Am. Fungi, 146.

North Carolina: Blowing Rock, *G. F. Atkinson, 4183.*

South Carolina: Santee, *H. W. Ravenel,* type (in Curtis Herb., 1007); Society Hill (in Curtis Herb., 1062).

Georgia: Vienna, *C. J. Humphrey, 5228.*

Florida: *W. W. Calkins* (in U. S. Dept. Agr. Herb., Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 56759), and in Ell. & Ev., Fungi Col., 917.

Alabama: Auburn, *F. S. Earle & C. F. Baker* (in Burt Herb. and Mo. Bot. Gard. Herb., 5110); Montgomery Co., *R. P. Burke, 31* (in Mo. Bot. Gard. Herb., 17137).

Louisiana: St. Martinville, *A. B. Langlois.*

Ohio: *A. P. Morgan* (in Lloyd Herb., 2607).

Kentucky: Mammoth Cave, *C. G. Lloyd, 2798.*

Missouri: Columbia, *B. M. Duggar, 550;* Marianna, *H. von Schrenk* (in Burt Herb. and Mo. Bot. Gard. Herb., 42837); Wicks, *L. O. Overholts, 3161* (in Mo. Bot. Gard. Herb., 5713).

Arkansas: *W. H. Long, 12703, 18502* (in Mo. Bot. Gard. Herb., 44160, 44161).

Texas: Jasper, *E. R. Hodson, 325,* comm. by P. L. Ricker.

Mexico: Jalapa, *C. L. Smith,* in Smith, Cent. Am. Fungi, 146.

Cuba: *C. Wright, 515*, the *S. scytale* of Fungi Cubenses but not according to the type (in Curtis Herb.).

70. S. sepium Burt, n. sp. Plate 6, fig. 70.

Type in Burt Herb.

Fructification corky, drying rigid, hard, resupinate, becoming broadly reflexed, with the upper surface concentrically sulcate, somewhat zonate, tomentose, sepia, the margin paler and entire; hymenium even, not shining, between light buff and avellaneous; in structure 600–1500 μ thick—up to 3 mm. thick in resupinate portion of Mexican specimens—, with the intermediate layer bordered and connected with the tomentum by a denser and darker zone and bearing on the opposite side a hymenial layer which becomes multizonate; hyphae of intermediate layer colored, thick-walled, densely and horizontally arranged, 3–3½ μ in diameter; cystidia incrusted, cylindric, 25–35×7 μ, becoming colored where buried in the deeper zones of the hymenium; paraphyses of bottle-brush or aculeate form, numerous and conspicuous in the hymenial surface, cylindric, 12–25×3–5 μ; spores hyaline, even, 4×2½ μ.



Fig. 41. *S. sepium*. Hymenium of type × 665, showing cystidia, *c*, and bottle-brush paraphyses, *p*.

Probably resupinate over large areas, for fragments fractured on three sides are 6 cm. square; reflexed margin 2–4 cm. long, 6 cm. wide.

Under side of rotten logs of frondose species. Pennsylvania to Mexico and Colombia. Collected from July to December but probably perennial.

The few collections of *S. sepium* which have been observed have the upper surface of the pileus a little brighter colored than that of *S. subpileatum* and the hymenium more avellaneous, but I cannot certainly separate the former from the latter except by the very numerous and conspicuous bottle-brush paraphyses which are present, in addition to cystidia, in the hymenium of

S. sepium. The specimens of Mexican collections cited below have larger size than those from the United States.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1205, under the name *Stereum subpileatum*.

Pennsylvania: West Chester, *Everhart & Haines*, in Ellis, N. Am. Fungi, 1205.

North Carolina: Blowing Rock, *G. F. Atkinson*.

South Carolina: Clemson College, *P. H. Rolfs, 1632*.

Georgia: Vienna, *C. J. Humphrey, 5229*, type.

Mexico: Jalapa, *W. A. & E. L. Murrill, 117, 188*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 11011, 54445), and *39* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56760).

Colombia: Bonda, *C. F. Baker, 24*, in Plants of Santa Marta, Colombia, under the name *Stereum illudens*.

71. S. albobadium (Schw.) Fries, Epicr. 551. 1838; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10:** 195. 1888; Sacc. Syll. Fung. **6:** 579. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 194. 1890. Plate 6, fig. 71.

Thelephora albobadia Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1:** 108. 1822 (in *C. Corticia*); Am. Phil. Soc. Trans. N. S. **4:** 167. 1832; Fries, Elenchus Fung. **1:** 189. 1828.—*T. albo-marginata* Schweinitz in Berkeley, Hooker's London Jour. Bot. **6:** 324. 1847; Lea's Cat. Plants Cincinnati, 66. 1849; Sacc. Syll. Fung. **6:** 539. 1888.—*Peniophora albo-marginata* (Schw.) Massee, Linn. Soc. Bot. Jour. **25:** 144. 1889.—*Stereum bizonatum* Berkeley & Curtis, Grevillea **1:** 163. 1873; Sacc. Syll. Fung. **6:** 582. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 178. 1890.—*S. Coffearum* Berkeley & Curtis, Linn. Soc. Bot. Jour. **10:** 332. 1868; Sacc. Syll. Fung. **6:** 576. 1888.—*Hymenochaete paupercula* Berkeley & Curtis, Linn. Soc. Bot. Jour. **10:** 334. 1868.—*Peniophora paupercula* (Berk. & Curtis) Cooke, Grevillea **8:** 150. 1880; Sacc. Syll. Fung. **6:** 645. 1888.

Type: I was unable to find the type in Herb. Schweinitz, although it was studied by Berkeley & Curtis, Acad. Nat. Sci. Phila. Jour. **3:** 221. 1856.

Fructifications coriaceous, thin, at first resupinate, orbicular,

becoming confluent, sometimes becoming narrowly reflexed, with the upper surface villose, varying from buffy brown to Natal-brown, becoming somewhat zonate when reflexed about 5 mm., the margin entire and usually whitish; hymenium even, somewhat velvety, bister or snuff-brown, becoming light drab and somewhat pruinose with age; in structure about 500 μ thick, the intermediate layer with a darker zone on its upper side and composed of loosely, longitudinally arranged, slightly colored hyphae 3–3$\frac{1}{2}$ μ in diameter; hymenium 30–45 μ thick, not zonate, having incrusted cystidia 30–45×8–15 μ all confined to the single-layered hymenium, protruding up to 25 μ; branched, filiform paraphyses 2 μ in diameter, becoming colored, are present also in the hymenium, basidia simple, 4-spored; spores white in spore collection, even, flattened on one side, 6–11×3–4$\frac{1}{2}$ μ.

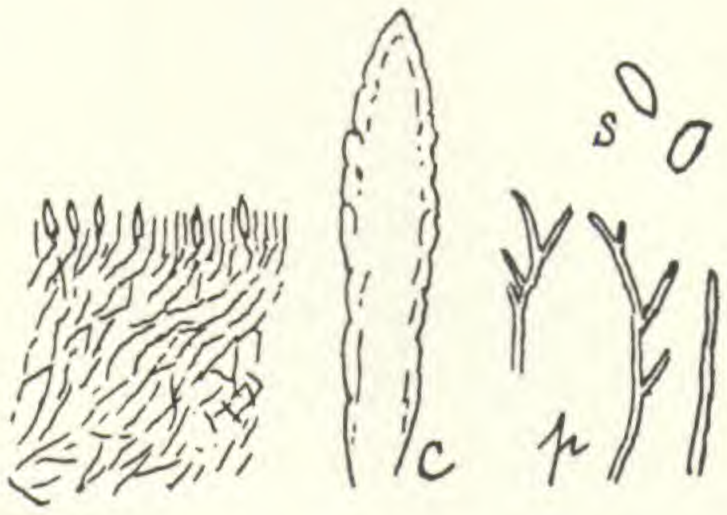


Fig. 42. *S. albobadium*. Section × 90; cystidium, *c*, paraphyses, *p*, and spores, *s*, × 665.

Fructifications 5–10 mm. in diameter, becoming confluent over areas 1–2 cm. wide and 3 to many cm. long, and reflexed 2–5 mm.

On dead frondose wood and fallen limbs. New York to Mexico and westward to Idaho and Arizona, in the West Indies, and reported from Brazil. Throughout the year. Common.

S. albobadium may usually be recognized by its brown, velvety hymenium with a white border; with age the hymenium tends to become more uniformly light drab or pruinose, but some small fructifications in the vicinity are likely to show the original color contrasts. This species has a wide geographic range and is somewhat variable in coloration but is very constant in microscopic structure; the branched, colored paraphyses are highly distinctive.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 3688, 4784; Ellis, N. Am. Fungi, 15; Ravenel, Fungi Am., 221, 449; Ravenel, Fungi Car. **1**: 29.

New York: Grand View, *H. von Schrenk* (in Mo. Bot. Gard.

Herb., 43009); Orient, *R. Latham* (in Mo. Bot. Gard. Herb., 16267).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 15.

Maryland: Plummers Island, *C. L. Shear, 1276, 1277;* Seven Locks, *P. L. Ricker, 1007;* Takoma Park, *C. L. Shear, 1118, 1126.*

District of Columbia: Washington, *C. L. Shear, 1263–1265, 1402.*

Virginia: Arlington Cemetery, *W. H. Long, 12978* (in Mo. Bot. Gard. Herb., 55104).

North Carolina: Chapel Hill, *W. C. Coker, 3849* (in Mo. Bot. Gard. Herb., 56672).

South Carolina: Curtis Herb., 1924, type of *Stereum bizonatum* (in Kew Herb.); *Ravenel*, in Ravenel, Fungi Car. 1: 29; Aiken, *H. W. Ravenel*, in Ravenel, Fungi Am., 449; Clemson College, *P. H. Rolfs, 1637;* Society Hill, under the name *T. albo-marginata* (in Curtis Herb.).

Georgia: Atlanta, *E. Bartholomew*, in Bartholomew, Fungi Col., 4784; Darien, *H. W. Ravenel*, in Ravenel, Fungi Am., 221.

Florida: New Smyrna, *C. G. Lloyd, 2089, 2104, 2132.*

Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56764), *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 5055, 56765, 56772), *C. R. Hudson* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55568); *McGeher* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56766), and *L. M. Underwood*, comm. by U. S. Dept. Agr.; Fayette Co., *P. V. Siggers*, comm. by A. H. W. Povah, 16 (in Mo. Bot. Gard. Herb., 14849); Mobile, *E. Bartholomew, 5752* (in Mo. Bot. Gard. Herb., 44257); Montgomery, *R. P. Burke, 5, 29* (in Mo. Bot. Gard. Herb., 20914, 17071).

Mississippi: Ocean Springs, *F. S. Earle, 181* (in Mo. Bot. Gard. Herb., 44311).

Louisiana: St. Martinville, *A. B. Langlois.*

Texas: Paris, *C. L. Shear, 1234;* Quitman, *W. H. Long, 18448, 12081* (in Mo. Bot. Gard. Herb., 55105, 55131); San Antonio, *H. von Schrenk*, also *W. H. Long, 21217* (in Mo. Bot. Gard. Herb., 42577 and 55131 respectively).

Ohio: *C. G. Lloyd, 189, 594* (in Lloyd Herb.); College Hill, *C. G. Lloyd, P;* Norwood, *C. G. Lloyd, 2810.*

Missouri: Meramec, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5017); Perryville, *L. O. Overholts & R. A. Studhalter*, comm. by L. O. Overholts, 2723 (in Mo. Bot. Gard. Herb., 44293); Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54861, 56768).

Kansas: Rooks Co., *E. Bartholomew* (in Burt Herb. and Mo. Bot. Gard. Herb., 5054); Stockton, *E. Bartholomew*, in Bartholomew, Fungi Col., 3688.

Idaho: Bonner's Ferry, *J. R. Weir, 592* (in Mo. Bot. Gard. Herb., 36746).

Arizona: Phoenix, *W. H. Long, 19030* (in Mo. Bot. Gard. Herb., 55106).

New Mexico: Cienega Springs, *W. H. Long, 21525* (in Mo. Bot. Gard. Herb., 55155); Tyom Experiment Station, *W. H. Long, 21364, 21408* (in Mo. Bot. Gard. Herb., 55107, 55108); Tejano Experiment Station, *W. H. Long, 21889, 21897, 21902* (in Mo. Bot. Gard. Herb., 55165–55167).

Bermuda: *S. Brown, N. L. Britton, & F. J. Seaver, 1244* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56273).

Cuba: *C. Wright, 247*, type of *Stereum Coffearum* (in Curtis Herb.), and *542*, type of *Hymenochaete paupercula* (in Curtis Herb.), and *C. G. Lloyd, 423* (in Mo. Bot. Gard. Herb., 55159); Alto Cedro, *L. M. Underwood & F. S. Earle, 1492, 1590*, comm. by N. Y. Bot. Gard. Herb.; La Gloria, Camaguey, *J. A. Shafer, 740* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56770); Managua, *Earle & Murrill, 11*, comm. by N. Y. Bot. Gard. Herb.; Omaja, *C. J. Humphrey, 2746* (in Mo. Bot. Gard. Herb., 14385); San Diego de los Baños, *Earle & Murrill, 281, 302, 316, 353*, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson, 2424, 6272* (in Mo. Bot. Gard. Herb., 3607, 55090).

Mexico: Jalapa, *W. A. & E. L. Murrill, 301, 309*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54432, 54483); Motzorongo, Cordoba, *W. A. & E. L. Murrill, 992*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54597); Orizaba, *W. A. & E. L. Murrill, 760, 761, 766, 769, 774, 779*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54627, 54631, 54628, 54629, 54610,

54645); Tepeite Valley, Guernavaca, *W. A. & E. L. Murrill, 408*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54544); Xuchiles, Cordoba, *W. A. & E. L. Murrill, 1209, 1210*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54598, 54599).

72. S. heterosporum Burt, n. sp. Plate 6, fig. 72.

Type: in Mo. Bot. Gard. Herb.

Fructifications coriaceous, thin, resupinate, orbicular, becoming confluent, sometimes reflexed, with the upper surface villose, bister, somewhat concentrically sulcate and zonate, the margin entire, whitish; hymenium even, somewhat velvety, bister, becoming light drab and somewhat pruinose in the center with age; in structure 300–500 μ thick, the intermediate layer with a darker zone on its upper side and composed of loosely and longitudinally arranged, slightly colored hyphae 3–3$\frac{1}{2}$ μ in diameter, many of

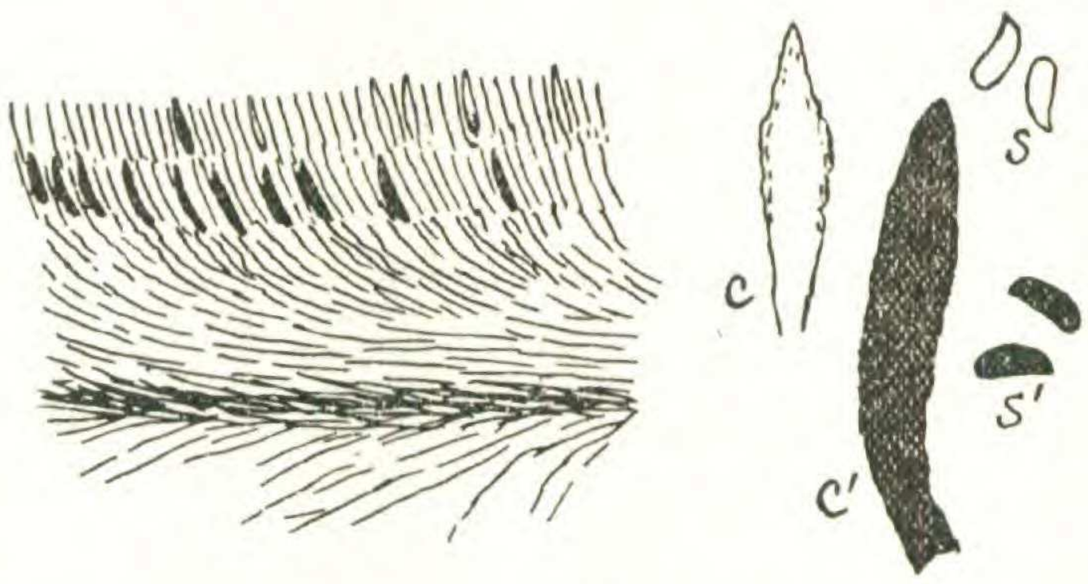


Fig. 43. *S. heterosporum*. Section × 90; hyaline cystidium, *c*, colored cystidium, *c'*, hyaline spores, *s*, colored spores *s'*, × 665.

which curve into the hymenium and often become there as dark-colored as conducting organs and sometimes incrusted; hymenium 70–120 μ thick, becoming more or less zonate, with cystidia incrusted starting from all parts of the layer, 30–35×6–7 μ, protruding up to 15 μ, often colored under the incrustation in the deeper layers of the hymenium; paraphyses filiform, 2 μ in diameter, branched, numerous at the surface of the hymenium; basidiospores hyaline, even, 8–9×3$\frac{1}{2}$ μ, borne 4 to a basidium; ochraceous spores of the same form and dimensions as the basidiospores often occur copiously imbedded throughout the hymenium.

Fructifications 5–10 mm. in diameter, becoming confluent over areas 1–2 cm. wide and up to 12 cm. long, and reflexed 2–7 mm.

On wood and in crevices of the bark of dead limbs and logs of *Eucalyptus*, oak, pecan, and other frondose species. Oregon to Mexico. September to April.

Resupinate specimens of *S. heterosporum* are not distinguishable in aspect from the darkest colored specimens of *S. albobadium*; all specimens of the former which have been seen so far have been bister or seal-brown, which is also the color of the upper side of the pileus. Mature specimens of *S. heterosporum* differ from those of *S. albobadium* in the much thicker zonate hymenium which has cystidia in all parts of this layer and many wholly buried below the surface; the deeper region of the hymenium is dark-colored in the type because of the abundance of dark-colored hyphal ends which are occasionally incrusted, and colored imbedded spores are as numerous as in *Stereum rugisporum*, which has nearly the same geographic range. I have not found colored imbedded spores in the collection distributed in Ell. & Ev., Fungi Col., 1116, which I refer to *S. heterosporum* on account of other distinctive characters of this species.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 1116, under the name *Stereum albobadium*.

Oregon: Portland, *C. J. Humphrey, 6125*.

California: Berkeley, *C. J. Humphrey, 5981*; Campo Mts., *C. R. Orcutt, 2007, 2008*, comm. by U. S. Dept. Agr. Herb.; Compton, *A. J. McClatchie*, in Ell. & Ev., Fungi Col., 1116, and (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56769); Claremont, *D. L. Crawford, 1513*, comm. by L. O. Overholts, 3325 (in Mo. Bot. Gard. Herb., 21688); Santa Cruz, *Dr. Anderson*, comm. by W. G. Farlow.

Arizona: Coronado National Forest, *G. G. Hedgcock & W. H. Long*, comm. by C. G. Humphrey, 2562, 2563 (in Mo. Bot. Gard. Herb., 13070, 12811).

Mexico: Parral, Chihuahua, *E. O. Matthews, 3*, and *27*, type (in Mo. Bot. Gard. Herb., 44282, 44420, 44106); Rosario, *E. O. Matthews* (in Mo. Bot. Gard. Herb., 44110).

73. S. versiforme Berk. & Curtis, Grevillea **1:** 164. 1873; Sacc. Syll. Fung. **6:** 580. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 193. 1890. Plate 6, fig. 73.

Peniophora Ellisii Massee, Linn. Soc. Bot. Jour. **25:** 144. 1889; Sacc. Syll. Fung. **9:** 237. 1891.—An *Thelephora obscura* Persoon, Myc. Eur. **1:** 146. 1822 (in **** Corticium)? See *Peniophora obscura* (Pers.) Bresadola, I. R. Accad. Agiati Atti III. **3:** 113. 1897.

Type: in Kew Herb. and Curtis Herb.

Fructifications at first thin, effused, resupinate, adnate, orbicular, becoming confluent, finally thickening, cracking, and becoming narrowly reflexed and somewhat complicate and curling away from the substratum, the upper side uneven, plicate, somewhat fuscous or blackish; hymenium velvety, Prout's brown to bister, somewhat papillate; in structure 200–400 μ thick, composed of densely arranged, ascending and interwoven hyphae, some of which are colored; hymenium usually simple but sometimes with one or two additional zones in some places, containing heavily incrusted, cylindric cystidia 45–75×12–24 μ, starting in various parts of the hymenium and subhymenium, wholly buried below the surface of the hymenium or emerging up to 15 μ; hymenial surface velvety, with very numerous colored paraphyses with bushy-branched tips; spores hyaline, even, curved, 5–7×2–3 μ.

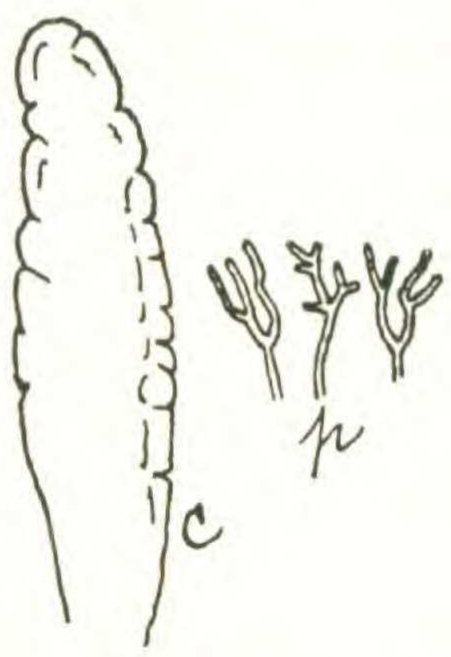


Fig. 44. *S. versiforme.* Cystidium, *c*, and paraphyses, *p*, × 665.

Fructifications 2–10 mm. in diameter, confluent over areas up to 7×1–2 cm.; margin reflexed about 1 mm. usually, rarely up to 2 mm.

On the bark of dead limbs of oak, chestnut, birch, and other frondose species. Canada to Alabama and westward to Iowa and Arkansas. July to February. Common.

S. versiforme is distinct among the Stereums by its Prout's brown, velvety, or at least dull, hymenium, barely reflexed margin, and colored, bushy-branched paraphyses, among which are scattered large, incrusted cystidia. The presence of these

paraphyses, the location of the cystidia in the hymenial side of the fructification, and the velvety surface sharply separate wholly resupinate specimens of *S. versiforme* from brownish colored forms of *Peniophora cinerea.*

Peniophora obscura (Pers.) Bresadola, according to specimen collected in Hungary, communicated to me by Bresadola and compared by him with an authentic specimen of Persoon, is strikingly similar to very young and wholly resupinate specimens of *Stereum versiforme.* There is no European record that *P. obscura* ever has been observed reflexed or has shown any tendency to become reflexed. In America, *S. versiforme* is wholly resupinate only when very young and soon thickens, becomes more or less reflexed, and in well-developed specimens such as that cited below, collected by Underwood at White Plains, N. Y., has but little in common with *P. obscura.* For these reasons I believe that the name *Stereum versiforme* should be applied to American specimens until Europeans find their *Peniophora obscura* in a reflexed stage identical in its characters with *S. versiforme.*

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 606, under the name *Stereum papyrinum;* Ell. & Ev., N. Am. Fungi, 3209; Ell. & Ev., Fungi Col., 611; de Thümen, Myc. Univ., 307.

Canada: *J. Macoun, 8* in part, *70;* on peach tree, *J. H. Faull* (in Mo. Bot. Gard. Herb., 55561).

Quebec: Hylmer, *J. Macoun, 229.*

Ontario: York Mills, *J. H. Faull,* Univ. Toronto Herb., 322 in part (in Mo. Bot. Gard. Herb., 44933).

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 55586).

Vermont: Ripton, *E. A. Burt.*

Massachusetts: Arlington Heights, *E. A. Burt;* Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55231); Waverly, *A. B. Seymour, T 15* (in Mo. Bot. Gard. Herb., 18098).

New York: Alcove, *C. L. Shear, 1139, 1304, 1328;* East Galway, *E. A. Burt;* Grand View, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42807); Ithaca, *Van Hook,* comm. by G. F. Atkinson, 8217; Karner, *H. D. House* (in N. Y. State Mus. Herb.

and Mo. Bot. Gard. Herb., 54354, 54366); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 5031).

New Jersey: Newfield, *J. B. Ellis*, comm. by C. G. Lloyd, and in Ellis, N. Am. Fungi, 606, Ell. & Ev., N. Am. Fungi, 3209, Fungi Col., 611, and de Thümen, Myc. Univ., 307.

Pennsylvania: *Michener*, type (in Curtis Herb., 4265, and in Kew Herb.); Bethlehem, *Schweinitz* (in Herb. Schweinitz, under the name *Thelephora amphibola* of Schw., Syn. N. Am. Fungi, No. 726, but not of Fries); Carbondale, *E. A. Burt*, two collections; State College, *C. R. Orton & L. O. Overholts*, comm. by L. O. Overholts, 2661 (in Mo. Bot. Gard. Herb., 11419); Trexlertown, *W. Herbst, 14*.

Maryland: Glen Sligo, *C. L. Shear, 1050, 1095;* Hyattsville, *F. L. Scribner, 90*, comm. by U. S. Dept. Agr. Herb.; Takoma Park, *C. L. Shear, 1020, 1336*.

Virginia: Fairfax, comm. by U. S. Dept. Agr. Herb.; Woodstock, *C. L. Shear, 1196*.

South Carolina: Salem, *Schweinitz* (in Herb. Schweinitz, under the name *Thelephora bufonia* of Schw., Syn. N. Am. Fungi, No. 725, but probably not *T. bufonia* Pers., which is too imperfectly known for recognition in Europe); Summerville, *C. L. Shear, 1227*.

Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56785, 56786), and *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56787, 56788).

Michigan: Ann Arbor, *C. H. Kauffman, 21* (in Mo. Bot. Gard. Herb., 9808), and *Abrams* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56789).

Iowa: Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6518 (in Mo. Bot. Gard. Herb., 20624).

Missouri: Concordia, *C. H. Demetrio* (in Mo. Bot. Gard. Herb., 5030); Oran, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42887); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 8725); Williamsville, *B. M. Duggar, 478, 481*.

Arkansas: Bigflat, *W. H. Long, 19783, 19898* (in Mo. Bot. Gard. Herb., 5921, 9138); Cass, *W. H. Long, 19800, 19827* (in Mo. Bot. Gard. Herb., 8636, 8886); Womble, *W. H. Long*,

19768, 19873, 19881 (in Mo. Bot. Gard. Herb., 9143, 8964, 5920).

74. S. insigne Bresadola, Nuov. Gior. Bot. Ital. **23**: 158. 1891; Sacc. Syll. Fung. **9**: 222. 1891. Plate 6, fig. 74.

Type: authentic specimen, probably part of the type, in Burt Herb.

Fructification corky, drying rigid, hard, effuso-reflexed, the upper surface concentrically sulcate, somewhat zonate, tomentose, snuff-brown to bister, the recent growth at the margin paler; hymenium even, pinkish buff to drab-gray and pruinose; in structure 1500 μ thick, with the intermediate layer bordered and connected with the tomentum by a darker and denser zone and bearing on the opposite side a multizonate hymenium; hyphae of the intermediate layer colored, thick-walled, densely and longitudinally arranged, $3\frac{1}{2}$ μ in diameter; no cystidia; paraphyses of bottle-brush or aculeate form, numerous and conspicuous in the hymenial surface, cylindric, 25–30×4–$4\frac{1}{2}$ μ; spores published by Bresadola as hyaline, even, 4–6×3–$3\frac{1}{2}$ μ—none found by me.



Fig. 45. *S. insigne.* Section of hymenium of authentic specimen × 665; bottle-brush paraphyses, *p*.

Reflexed $1\frac{1}{2}$–4 cm., laterally confluent for 9 cm. in the Florida specimen.

On oak logs. Florida, Venezuela, and Italy. February. Rare.

This species belongs in the group with *S. subpileatum* and *S. sepium* and is not distinguishable in general aspect from these species, but its hymenium contains numerous and conspicuous bottle-brush paraphyses and no cystidia, while both of the other species named have cystidia. The Venezuelan specimen cited below was determined by Berkeley as *Stereum illudens*, from which it appears distinct, for while the type of *S. illudens*, in Kew Herbarium, collected by Drummond, 158, Swan River, Australia, has bottle-brush paraphyses for its hymenial surface, it has in its subhymenium elongated, cylindric, thick-walled organs 6 μ in diameter, up to 100 μ long, a little darker colored than the surrounding hyphae and curving outward into the deeper portion of the hymenium, which is not zonate.

Specimens examined:
Italy: Florence, *Martelli*, comm. by G. Bresadola.
Florida: *C. G. Lloyd, 4846.*
Venezuela: *Fendler, 177* (in Curtis Herb.).

75. S. durum Burt, n. sp. Plate 6, fig. 75.

Type: in Smith, Central Am. Fungi, 147, copy in Mo. Bot. Gard. Herb.

Fructification very hard, orbicular, attached by the center, free or reflexed all around, concentrically sulcate, fuscous to bone-brown, with a horn-like crust, becoming somewhat shining; hymenium even, not shining, between pale drab-gray and tilleul-buff, somewhat pruinose; in structure 2–3 mm. thick, hazel throughout, and multizonate or stratose, containing many scattered crystals, hyphae $3\frac{1}{2}$–4 μ in diameter; paraphyses of bottle-brush or aculeate form, numerous and conspicuous in the hymenial surface, cylindric, 12–15 $\times$4–5 μ; no cystidia; no spores found.

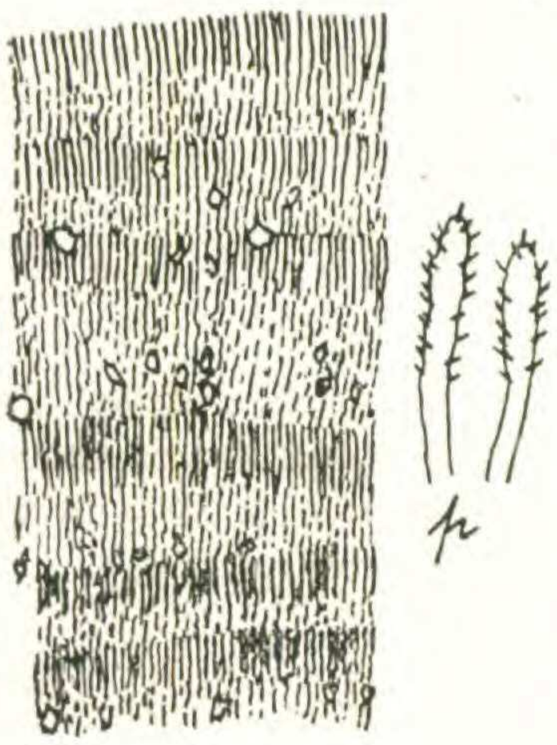


Fig. 46. *S. durum*. Section of hymenial region of type $\times$ 90; bottle-brush paraphyses, *p*, $\times$ 665.

Fructification 3 cm. in diameter, reflexed 1 cm.

On dead wood. Mexico.

S. durum is much thicker, harder, and more rigid than *S. insigne* and not tomentose. The microscopic structure agrees exactly with that of preparations from an authentic specimen in Kew Herbarium of *Stereum annosum*, No. 99, collected at Neilgherries, Ceylon, and should be compared with the latter when better known. For the present the development of a pileus by *S. durum*, with characters as stated, is reason for regarding this species as distinct from *S. annosum*, a resupinate species of the other side of the world.

Specimens examined:
Exsiccati: Smith, Central Am. Fungi, 147, under the name *Stereum ferreum.*
Mexico: Jalapa, *C. L. Smith*, type, in Smith, Central Am. Fungi, 147.

76. S. frustulosum (Pers.) Fries, Epicr. 552. 1838; Hym. Eur. 643. 1874; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10:** 196. 1888; Sacc. Syll. Fung. **6:** 572. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 199. 1890. Plate 6, fig. 76.

Thelephora frustulosa Persoon, Syn. Fung. 577. 1801; Myc. Eur. **1:** 134. 1822; Fries, Syst. Myc. **1:** 445. 1821.—*Thelephora perdix* Hartig, Zersetzung. des Holzes, 103–108. *pl. 13.* 1878.

Illustrations: Cooke, Fung. Pests, *pl. 20. f. 20;* Hartig, *loc. cit.;* Massee, Dis. Cult. Plants, 397. *text f. 124;* Tubeuf, Dis. of Plants, 35. *text f. 11*, and 430. *text f. 260, 261.*

Fructifications woody, resupinate, tuberculose, crowded as if confluent and then broken up into frustules, sometimes grown outward from place of attachment and narrowly reflexed or with a free margin all around, the upper side black, crust-like,

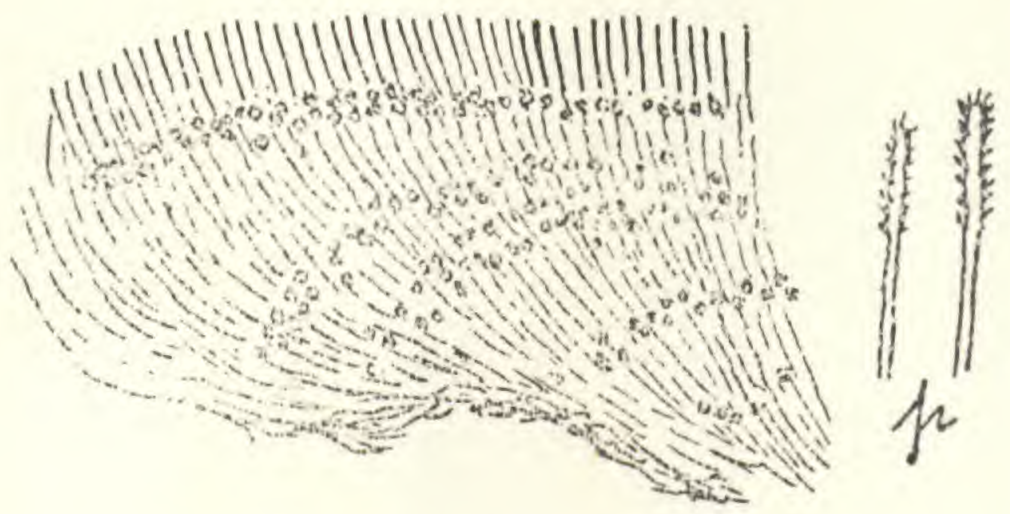


Fig. 47. *S. frustulosum.* Section × 45; bottle-brush paraphyses, *p*, × 665.

concentrically sulcate, glabrous; hymenium convex, pinkish buff to whitish and pruinose; in structure 800 μ or more thick, with hyphae densely arranged, radiating outward from the place of attachment and bearing a multizonate hymenium in which are great numbers of bottle-brush or aculeate paraphyses; spores hyaline, even, 5–6×3–3½ μ.

Fructifications 2–4 mm. in diameter; margin reflexed 3 mm. in the best developed specimen known to me.

On wood of oak logs and stumps in which it causes a pocketed or honey-comb rot. Canada to Texas and westward to Oregon, in Mexico and in Europe.

S. frustulosum may be recognized by its occurrence in small convex fructifications of woody consistency, crowded together

on the under side of dry and hard oak wood or on the sides of stumps. On the sides of stumps it may sometimes be found reflexed. The bottle-brush paraphyses and many-zoned hymenium are good structural characters for confirmation of the determination.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 1881, 4587; Ellis, N. Am. Fungi, 106; Ell. & Ev., Fungi Col., 7; Ravenel, Fungi Car. **2**: 34; de Thümen, Myc. Univ., 308.

Sweden: Stockholm, *L. Romell, 28;* Upsala, *E. P. Fries* (in Curtis Herb.).

France: Aveyron, *A. Galzin, 13935,* comm. by H. Bourdot, 26649.

Ontario: Carleton Place, *J. Macoun, 421* (in Macoun Herb.).

Vermont: Grand View Mt., *E. A. Burt,* three collections.

Massachusetts: Dedham, *Hanna;* Wellesley, *L. W. Riddle, 14.*

New York: Glasco, *P. Wilson, 50* (in Mo. Bot. Gard. Herb., 54763); Ithaca, *W. C. Muenscher, 144* (in Mo. Bot. Gard. Herb., 56601); Palisades, *P. Wilson, 62* (in Mo. Bot. Gard. Herb., 54761).

New Jersey: Alpine, *P. Wilson, 8* (in Mo. Bot. Gard. Herb., 54764); Englewood, *P. Wilson, 60* (in Mo. Bot. Gard. Herb., 54762); Hackensack Swamp, *W. H. Ballou* (in Mo. Bot. Gard. Herb., 56599); Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 106, in Ell. & Ev., Fungi Col., 7, and de Thümen, Myc. Univ., 308.

Pennsylvania: Kittanning, *D. R. Sumstine.*

Maryland: Hyattsville, *F. L. Scribner* (in U. S. Dept. Agr. Herb.).

South Carolina: *H. W. Ravenel,* in Ravenel, Fungi Car. **2**: 34; Clemson College, *P. H. Rolfs, 1621, 1630, 1638.*

Florida: Tallahassee, *E. Bartholomew,* in Bartholomew, Fungi Col., 4587.

Alabama: Auburn, *F. S. Earle & C. F. Baker* (in Mo. Bot. Gard. Herb., 5079); Montgomery, *R. P. Burke, 27* (in Mo. Bot. Gard. Herb., 17875).

Louisiana: *A. B. Langlois.*

Texas: Denton, *W. H. Long,* in Bartholomew, Fungi Col., 1881; Galveston, *H. W. Ravenel, 36,* comm. by U. S. Dept. Agr. Herb.

Ohio: *C. G. Lloyd, 185* (in Lloyd Herb.); Loveland, *D. L. James* (in U. S. Dept. Agr. Herb.).
West Virginia: Paw Paw, *C. L. Shear, 1180.*
Kentucky: Crittenden, *C. G. Lloyd, 1685.*
Wisconsin: Blue Mounds, *Miss A. O. Stucki, 30;* Madison, *W. Trelease, 83* (in Mo. Bot. Gard. Herb., 44105).
Iowa: Webster Co., *O. M. Oleson, 450* (in Mo. Bot. Gard. Herb., 44062).
Missouri: Columbia, *B. M. Duggar, 443;* Creve Coeur, *P. Spaulding* (in Mo. Bot. Gard. Herb., 44103), and *E. A. Burt* (in Mo. Bot. Gard. Herb., 7861); St. Louis, *Miss C. Rumbold;* Valley Park, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44058, 44063).
Nebraska: Saltillo, *C. L. Shear, 1051.*
Kansas: Bourbon Co., *A. O. Garrett, 125.*
Oregon: Portland, *J. R. Weir, 597* (in Mo. Bot. Gard. Herb., 36747).
Mexico: Tepeite Valley, Guernavaca, *W. A. & E. L. Murrill, 411* (in Mo. Bot. Gard. Herb., 54545).
U. S. Northern Pacific Expl. Exp.: Ousmia, *C. Wright,* comm. by U. S. Dept. Agr. Herb.

77. S. roseo-carneum (Schw.) Fries, R. Soc. Sci. Upsal. Actis III. **1**: 112. 1851. Plate 6, fig. 77.

Thelephora roseo-carnea Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 107. 1822 (under *C. Corticia*).—*T. anthochroa* Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 168. 1832, but not *T. anthochroa* of European authors.—*Corticium lilacino-fuscum* Berkeley & Curtis, Grevillea **1**: 180. 1873; Sacc. Syll. Fung. **6**: 621. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 143. 1890.—*Stereum lilacino-fuscum* (Berk. & Curtis) Lloyd, Myc. Writ. **5**. Letter 68: 8. 1919.—*S. sendaiense* Lloyd, Myc. Writ. **5**. Myc. Notes 48: 680. *text f. 1015.* 1917.—*Corticium subrepandum* Berkeley & Cooke, Grevillea **6**: 81. 1878; Sacc. Syll. Fung. **6**: 608. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 119. 1890.

Illustrations: Lloyd, *loc. cit.*

Type: in Herb. Schweinitz, under the name *Thelephora anthochroa.*

Fructifications coriaceous-soft, thin, usually resupinate, effused,

becoming confluent, sometimes with margin barely free, rarely distinctly reflexed, with the upper surface tomentose, light buff to pinkish buff, the margin entire; hymenium even, cracking in a tessellated manner, not shining, light vinaceous purple when young, gradually changing to avellaneous when mature; in structure 250–300 μ thick, composed of somewhat longitudinally and loosely interwoven, hyaline, thin-walled, nodose-septate hyphae $2\frac{1}{2}$–3 μ in diameter, not differentiated into an intermediate layer with a dark or dense bordering zone; hymenial layer simple when young, with very numerous and conspicuous, filiform paraphyses, colored above and with short-branched tips or bearing short lateral prongs on from 5–20 μ of the outer portion of the paraphysis, the paraphyses less conspicuous when basidia appear; spores white in spore collection, even, flattened on one side, 6–9×4–5 μ, borne 4 to a basidium on simple basidia.

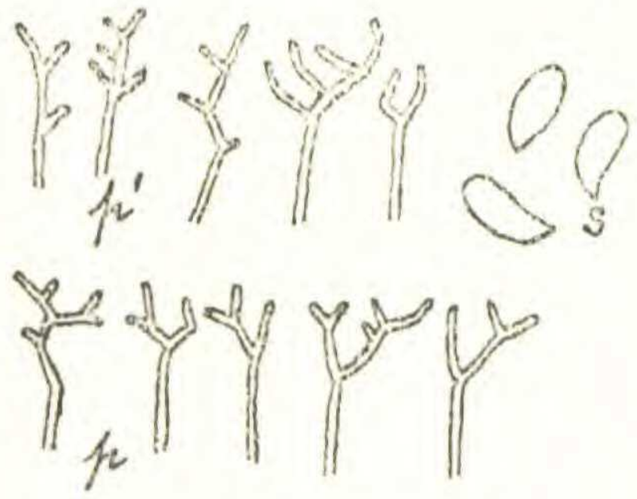


Fig. 48. *S. roseo-carneum*. Paraphyses of type, *p;* paraphyses, *p'*, of collection at Ithaca, and spores, *s*, all × 665.

At first forming little fructifications 3–5×2 mm., which become confluent over areas up to 6×$1\frac{1}{2}$ cm.; margin becoming free or reflexed for 1–3 mm.

On fallen limbs of frondose species. Canada to North Carolina and westward to Wisconsin, and in Brazil and Japan.

Since *S. roseo-carneum* is nearly always resupinate and does not show in sectional preparations of such specimens a distinct intermediate layer, its inclusion in the genus *Stereum* must trouble beginners. Fortunately it is a species so unique in structure that it may be determined with confidence. Most collections are likely to show more or less of the fuscous-lilac color, which is intense in young stages; the hymenium cracks and has the aspect of *Corticium evolvens* in other features than color, although of different structure; sections of *S. roseo-carneum* show in the hymenial surface filiform paraphyses branched above, as shown in the text figure. Such paraphyses are present in only one of our Corticiums—*Corticium roseum.* It is regrettable that the Schweinitz type was relabeled by Dr.

Michener to conform to the name used by Schweinitz in 'Synopsis North American Fungi' and the original label removed from the specimen, but Schweinitz gives in the later publication the name which he originally used.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 515 and 20, the latter under the name *Corticium incarnatum*.

Ontario: London, *J. Dearness, D945 k*, reflexed specimen (in Mo. Bot. Gard. Herb., 14251).

New Hampshire: Chocorua, *W. G. Farlow*, reflexed specimen; North Conway, *L. O. Overholts, 5032, 5161*—the latter reflexed (in Mo. Bot. Gard. Herb., 56348, 56349).

Vermont: Middlebury, *E. A. Burt*, two collections, of which one is reflexed; Ripton, *E. A. Burt*.

Massachusetts: reflexed specimen, comm. by C. H. Peck; Arlington Heights, reflexed specimen, *E. A. Burt;* Sharon, *A. P. D. Piguet*, comm. by W. G. Farlow.

Connecticut: *C. Wright*, type of *Corticium lilacino-fuscum* (in Kew Herb. and Curtis Herb., 5610).

New York: Alcove, *C. L. Shear, 1001, 1002, 1004, 1072, 1321;* Altamont, reflexed specimen, *E. A. Burt;* Brookton, *W. C. Muenscher, 215* (in Mo. Bot. Gard. Herb., 56612) Cayuga Lake basin, *G. F. Atkinson, 3022;* East Galway, *E. A. Burt;* Ithaca, *Van Hook*, and *H. S. Jackson*, comm. by G. F. Atkinson, 8247 and 14396 respectively; North Elba, *C. H. Kauffman, 13* (in Mo. Bot. Gard. Herb., 16987).

New Jersey: Newfield, *J. B. Ellis, 2487*, type of *Corticium subrepandum* (in Kew Herb.), and in Ellis, N. Am. Fungi, 20, and 515.

Pennsylvania: Spruce Creek, *J. H. Faull*, Univ. Toronto Herb., 312 (in Mo. Bot. Gard. Herb., 44886); State College, *L. O. Overholts, 2676* (in Mo. Bot. Gard. Herb., 5946), and *L. O. Overholts & C. R. Orton*, comm. by L. O. Overholts, 5041, reflexed specimen (in Mo. Bot. Gard. Herb., 56359).

District of Columbia: Rock Creek, *C. L. Shear, 1352;* Washington, *T. Pergande* (in U. S. Dept. Agr. Herb.).

Virginia: Woodstock, *C. L. Shear, 786, 788*.

North Carolina: Salem, *Schweinitz*, type, under the name *Thelephora anthochroa* (in Herb. Schweinitz).

West Virginia: Fayette Co., *L. W. Nuttall,* comm. by Lloyd. Herb.
Michigan: Ann Arbor, *C. H. Kauffman, 13.*
Indiana: Crawfordsville, *D. Reddick, 9, 10.*
Wisconsin: Palmyra, *Miss A. O. Stucki, 48.*
Brazil: Rio Grande do Sul, Hamburgerberg, *G. O. Malme, 75,* comm. by L. Romell, 330.
Japan: *A. Yasuda,* comm. by C. G. Lloyd (in Mo. Bot. Gard. Herb., 55214), and part of type of *Stereum sendaiense* (in Mo. Bot. Gard. Herb., 55448); Sendai, *A. Yasuda,* reflexed specimen (in Mo. Bot. Gard. Herb., 56247).

SPECIES IMPERFECTLY KNOWN

Thelephora aculeata Berk. & Curtis, Grevillea **1**: 149. 1873; Sacc. Syll. Fung. **6**: 523. 1888.

The type was collected on the ground in Santee Swamp, South Carolina, in June. I had compared with the type a collection made by Professor P. H. Rolfs, on the ground, Clemson College, South Carolina, on June 18, and found this collection so similar to the type in aspect, although smaller, that I referred this specimen to *Thelephora aculeata.* I had not been able to demonstrate basidia for the type nor for the Rolfs specimen; now while working out the detailed structure of the latter specimen for publication, I find globose, longitudinally septate basidia 9 μ in diameter, and hyaline, even spores up to $9\times4\frac{1}{2}$–5 μ. It seems probable that when there is opportunity to examine the type again it may be found to have similar basidia and belong in *Tremellodendron.*

Stereum arenicolum Berkeley in Massee, Linn. Soc. Bot. Jour. **27**: 201. 1890.

"Resupinatum, effusum, crassum, rigidum, subtus tomento ferrugineo molli vestitum; hymenio levi, glabro fusco-purpurascente; sporae ellipsoideae, 7×4–5 μ (Berk. in Herb. n. 3822).

"On sand under trees, Vera Cruz.

"Rigid, thick, 2–3 inches across, attached to the sand and probably decayed wood by a dense ferrugineous tomentum; margin sometimes slightly upraised; substance pale cinnamon."

The above should be compared with *S. crassum.*

Stereum cuneatum Lloyd, Myc. Writ. 4. Letter 54: 7. 1916.

"Pileus cuneate, tapering to the base (2 cm. high), cut into a few fimbriate segments. Surface pale, smooth. Hymenium unilateral, pale yellow (honey yellow of Ridgway), smooth. Cystidia none. Spores globose, $3\frac{1}{2}$–4 mic., hyaline, smooth. The plant grows densely caespitose in the earth, from a common mycelial base. It belongs in Section 7 of my recent pamphlet on Stipitate Stereums." Florida.

Perhaps the above is *S. Burtianum* or *S. tenerrimum*.

Stereum cupulatum Patouillard in Duss, Fl. Crypt. Antilles Fr. 233. 1904.

Scattered or close together, orbicular, from resupinate becoming cup-shaped, attached by a dorsal point, coriaceous, rigid, hard; external face glabrous, not zonate, brown, the margin entire or sinuate, acute; hymenium pruinose, even, concave, dull cinereous, reddish towards the border; trama compact, brown-umber; spores cylindric-ovoid, colorless, $6\times3\ \mu$; no cystidia.

Fructifications 6–8 mm. in diameter.

On bark of *Prunus Dussii*.—Forest of Buins-Jaunes. *Duss, 212.*

The above is a translation of the original description; the species seems to be very near, if at all distinct from, *Stereum vibrans*, which Patouillard did not recognize among the species of Guadeloupe.

Stereum fragile Patouillard, Soc. Myc. Fr. Bul. **16:** 179. 1900; Sacc. Syll. Fung. **16:** 187. 1902.

Fructification resupinate at first, becoming dimidiate, orbicular, rigid, hard, more or less incised at first, the margin erect and acute; upper surface plane, ochraceous russet, tomentose, with some reddish and nearly glabrous concentric zones; trama 1 mm. thick, whitish, compact; hymenium plane, livid, becoming purplish; cystidia abundant, fusoid, not colored, thin-walled, $40\times10\ \mu$.

On decaying wood. Guadeloupe.

This fungus is very fragile and divides radially with great ease. Its aspect is like that of *S. fasciatum*, *S. lobatum*, etc., but

it is easily distinguished by the violaceous tint of the hymenium. I have not seen authentic specimens of *S. fragile*, but from the foregoing translation of the original description, it seems very probable that *S. fragile* may prove a synonym of *S. albobadium*, a species common in the West Indies but not recognized by Patouillard among the species of Guadeloupe.

Stereum fimbriatum Ellis, Torr. Bot. Club Bul. **6:** 133. 1877.

According to the authentic specimen from Ellis to Cooke in Kew Herb., this is a whitish, flaxy mass having no hymenium and quite indeterminable.

Stereum Galeottii Berkeley, Hooker's Jour. Bot. **3:** 15. 1851; Sacc. Syll. Fung. **6:** 574. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 176. 1890.

"Umbonato-sessile, parvum, convexum, rigidum; pileo cervino velutino-tomentoso crebrissime badio-zonati; zonis hic illic glabris nitentibus; hymenio cinereo-alutaceo. Galeotti, No. 6853.

"Hab. Caripi, Spruce; Vera Cruz, Galeotti; Xalapa, Mr. Harries.

"Pileus $1\frac{1}{2}$ inch broad, 1 inch long, subflabelliform, umbonato-sessile, mostly convex above, slightly undulated, thin but rigid, fawn-colored, clothed with velvety down; repeatedly zoned; zones mostly very close and narrow, frequently forming bay-brown, smooth and shining, alternating with paler fasciae. Hymenium tan-colored with a cinereous tinge.

"Undoubtedly nearly allied to *Stereum lobatum*, Kze, but a much smaller and neater species."

The type of the above should be compared with *Stereum versicolor*.

Stereum griseum Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1:** 106. 1822 (under *B. Sterea* of *Thelephora*); Fries, Elenchus Fung. **1:** 179. 1828.—*Stereum porrectum* Fries, Epicr. 548. 1838; Sacc. Syll. Fung. **6:** 579. 1888.

I have been unable to find any Schweinitzian specimen of this species. It seems probable that the description was based on the old stage of *Stereum fasciatum* in which the attachment is by

umbo prolonged into stem-like form. Such fructifications occur rarely and are perplexing if not gathered in the same collection with the usual sessile fructifications.

S. ochroleucum Fries, Hym. Eur. 639. 1874; Sacc. Syll. Fung. **6:** 562. 1888; Massee, Linn. Soc. Bot. Jour. **27:** 184. 1890.

Corticium ochroleucum Fries, Epicr. 557. 1838.—Not *Stereum ochroleucum* Bres. Ann. Myc. **1:** 91. 1903, nor Brinkmann, Westfälische Pilze, 49.

Type: authentic specimen in Kew Herb.

This species does not occur in North America and adjacent regions although reported from time to time from United States, Cuba, and Venezuela. Since I have not received under any name specimens of the true *Stereum ochroleucum* from European correspondents, this species is probably rare in Europe, and it may help toward recognition of the species to call attention to the specimen in Kew Herbarium.

The specimen is labelled:

"Corticium ochroleucum Fr.
Svex. Westm.
Maji — leg. Lbd."

This specimen agrees well with the original description; its reflexed portion is $1\frac{1}{2}$ cm. broad, about 1–1 1/5 mm. thick as the sections show in my preparation; the consistency is soft in comparison with *S. hirsutum* and the hyphae about $2\frac{1}{2}$ mm. in diameter, granule-incrusted, and interwoven throughout the thickness of the pileus rather than parallel and longitudinally arranged side by side as in *S. hirsutum* and *S. sulphuratum*. In other words there is not the sharply marked intermediate layer which Fries regarded as an important distinctive character of the genus *Stereum*, and this is probably the reason for his originally regarding this species as a *Corticium* although broadly reflexed. There is not present a hardened crust or golden zone to mark the upper side of the intermediate region, but instead the hyphae become more loosely arranged toward the surface and become the hairy covering of that side. No cystidia, gloeocystidia, nor colored conducting organs are present; the spores are hyaline, even, $4\frac{1}{2}$–$5 \times 3\ \mu$.

The American *Stereum spumeum* has aspect and structure very similar to *Stereum ochroleucum* Fr. but differs by having incrusted cystidia.

Stereum unicum Lloyd, Myc. Writ. 4. Stip. Stereums, 35. *text f. 556.* 1913.

The type is in New York State Museum under the name *Thelephora speciosa* unless relabeled to conform to the name applied by Lloyd. The type bears no basidia yet and is not determinable as to genus; it was collected in Providence, Saratoga County, New York, where I have been looking for a fertile specimen when in the original locality occasionally in the summer.

EXCLUDED SPECIES

Stereum acerinum (Pers.) Fr. is *Aleurodiscus acerinus* (Pers.) v. Höhn. & Litsch.

Stereum acerinum var. **nivosum** Berk. & Curtis is *Aleurodiscus nivosus* (B. & C.) v. Höhn. & Litsch.

Stereum calyculus Berk. & Curtis is *Craterellus calyculus* (B. & C.) Burt.

Stereum candidum Schweinitz is *Aleurodiscus candidus* (Schw.) Burt.

Stereum carolinense Cooke & Ravenel is *Sparassis spathulatus* (Schw.) Fr.

Stereum duriusculum, as determined by Patouillard in Duss, Fl. Antilles Fr. 232. 1903, is probably *Hypochnus pallescens* (Schw.) Burt, a species common in the West Indies.

Stereum Guadelupense Patouillard, Soc. Myc. Fr. Bul. **15:** 201. *pl. 10. f. 1.* 1899. According to von Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116:** 753. 1907, this is a *Boletus* overrun by a *Sepedonium.*

Stereum Haydeni Berkeley in Massee, Linn. Soc. Bot. Jour. **27:** 199. 1890.

The type, in Kew Herbarium, was collected in Ohio; it is strictly resupinate, has its hyphae loosely interwoven from hymenium to substratum, and has no characters which justify its inclusion in *Stereum* as comprehended in my work. The

hymenium is deteriorated but shows no cystidia; the species may be sought for in Ohio as a probable *Corticium*.

Stereum insolitum Lloyd, Myc. Writ. **5**. Myc. Notes 47: 665. *text f. 956*. 1917, is a young specimen of *Thelephora regularis* Schw.

Through the kindness of Professor McFarland, I have examined his portion of the original specimen. Most of the spores attached to the basidia are as published by Lloyd; a few spores are 6–7×5 μ, rough-walled and still hyaline; occasional spores in a preparation from near the base of the pileus are colored and tuberculate-irregular.

Stereum Leveillianum Berk. & Curtis is *Tremellodendron Leveillianum* (B. & C.)Burt.

Stereum Micheneri Berk. & Curtis is *Thelephora albido-brunnea* Schw.

Stereum Mancianus Sacc. & Cub. is *Aleurodiscus strumosus* (Fr.) Burt.

Stereum populneum Peck, N. Y. State Mus. Rept. **47**: 145. 1894.

This is known in resupinate form only and should not be included in *Stereum*.

Stereum pruinatum Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 332. 1868.

This is known in resupinate form only and should not be included in *Stereum*.

Stereum scriblitum Berk. & Cooke, Grevillea **7**: 102. 1879; Sacc. Syll. Fung. **6**: 567. 1888.

The type collected by *Gerard, 171* (in Kew Herb.) was studied. This is the conidial stroma of *Ustilina vulgaris*.

Stereum seriatum Berk. & Curtis is *Aleurodiscus seriatus* (B. & C.) Burt.

Stereum spongiosum Massee is *Thelephora albido-brunnea* Schw.

Stereum strumosum Fries is *Aleurodiscus strumosus* (Fr.) Burt.

Stereum subcruentatum Berk. & Curtis, Am. Acad. Arts & Sci. Proc. **4**: 123. 1858, is **Aleurodiscus subcruentatus** (Berk. & Curtis) Burt, n. comb.; now included among American species, because of collections received from California and Oregon.

Stereum triste Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 332. 1868.

This is the conidial stroma of a Pyrenomycete and shows young perithecia under the stroma in the type in Curtis Herb. Collection in Kew Herb., *C. Wright, 252*, has similar structure but did not show perithecia in my sections.

(To be continued.)

Explanation of Plate

PLATE 2

All figures of plates 2–6 have been reproduced natural size from photographs of dried herbarium specimens unless otherwise noted.

Fig. 1. *Stereum caperatum.* Specimen collected at St. Martinville, La., by A. B. Langlois.

Fig. 2. *S. hydrophorum.* Specimen collected at Rio Mato, Venezuela, by M. A. Carriker.

Fig. 3. *S. Ravenelii.* Type distribution in Ravenel, Fungi Car. 4: 13.

Fig. 4. *S. surinamense.* Specimen collected at Consuelo, San Domingo, by N. Taylor, 12.

Fig. 5. *S. Burtianum.* Specimens collected at Amherst, Mass., by P. J. Anderson.

Fig. 6. *S. quisquiliare.* From Lloyd's illustration of the type.

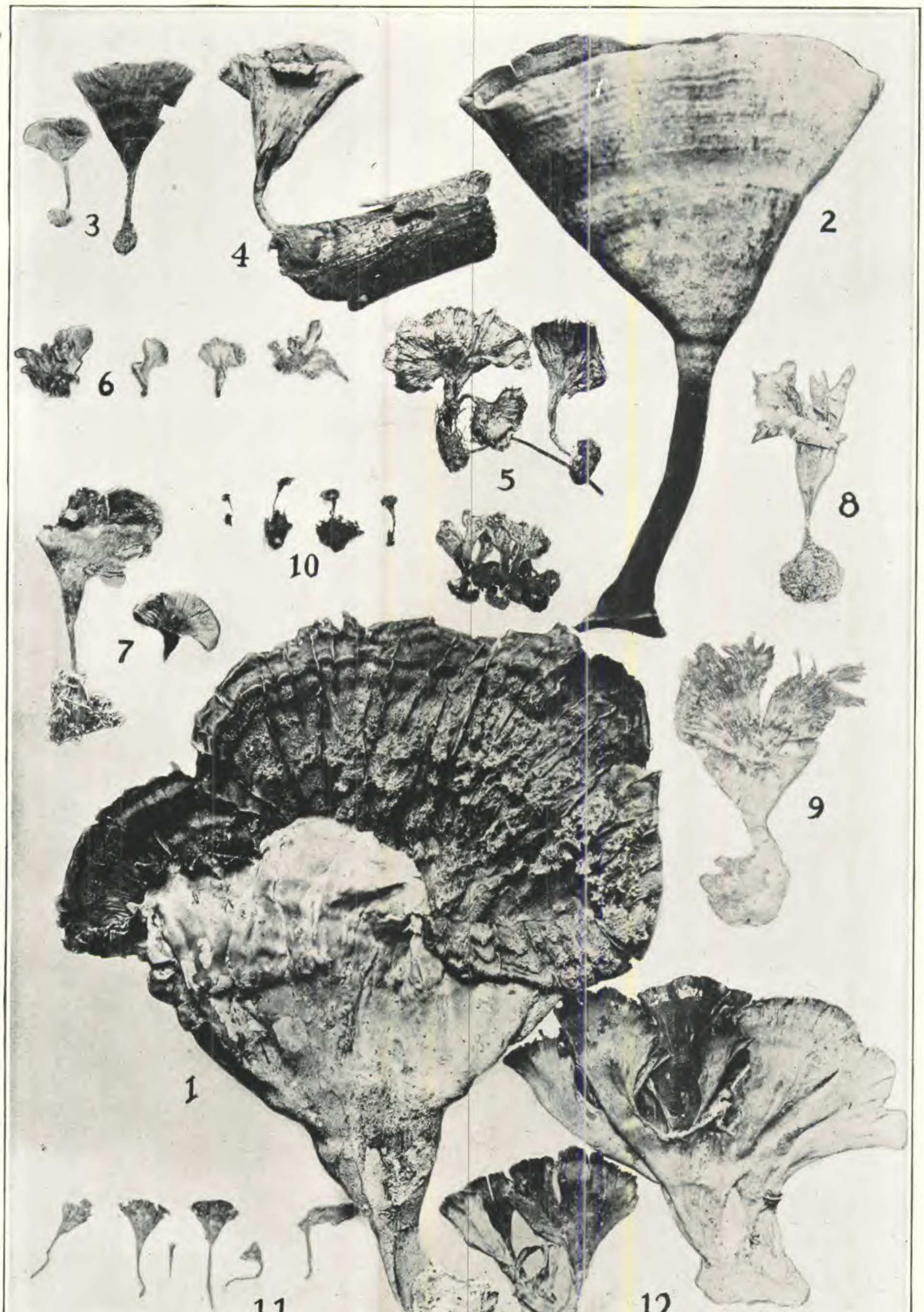
Fig. 7. *S. aurantiacum.* Specimens collected at Port Antonio, Jamaica, by F. S. Earle.

Figs. 8 and 9. *S. diaphanum.* Fig. 8 from type of *S. diaphanum*, and Fig. 9 from type of *S. Willeyi.*

Fig. 10. *S. exiguum.* Type.

Fig. 11. *S. tenerrimum.* Type.

Fig. 12. *S. pergamenum.* Type distribution in Ravenel, Fungi Car. 3: 25.



BURT—THELEPHORACEAE OF NORTH AMERICA

1. STEREUM CAPERATUM.—2. S. HYDROPHORUM.—3. S. RAVENELII.—4. S. SURINAMENSE.—5. S. BURTIANUM.—6. S. QUISQUILIARE.—7. S. AURANTIACUM.—8-9. S. DIAPHANUM.—10. S. EXIGUUM.—11. S. TENERRIMUM.—12. S. PERGAMENUM.

Explanation of Plate

PLATE 3

Figs. 13 and 14. *S. pallidum.* Fig. 13, specimen collected and determined by G. Bresadola; Fig. 14, specimen collected at Blowing Rock, N. C., by G. F. Atkinson.

Fig. 15. *S. elegans.* Specimen collected at Mayaguez, Porto Rico, by B. L. Santiago, 12.

Fig. 234. *S. decolorans.* Type.

Fig. 16. *S. radicans.* Specimen collected at Grenada, by W. E. Broadway.

Fig. 17. *S. pusiolum.* Specimen collected at Rio Piedras, Porto Rico, by J. R. Johnston, 89.

Fig. 18. *S. glabrescens.* Specimen collected at Sumidero, Cuba, by J. A. Shafer, 13906.

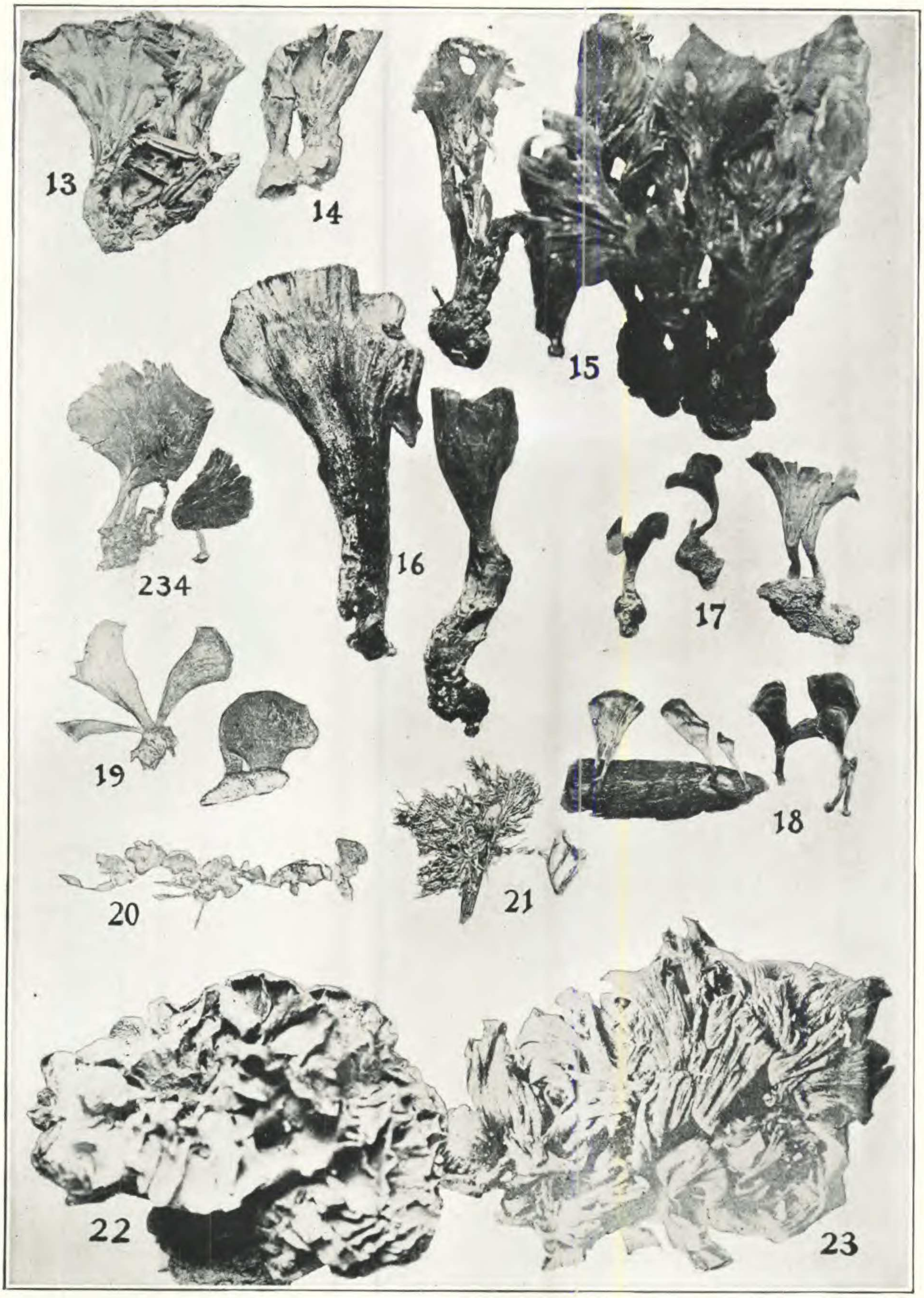
Fig. 19. *S. fissum.* Type.

Fig. 20. *S. cyphelloides.* Type.

Fig. 21. *S. Hartmanni.* Specimen collected at St. Kitt's, by N. L. Britton & J. F. Cowell.

Fig. 22. *S. craspedium.* Specimen collected in Dutch Guiana, by J. Samuels.

Fig. 23. *S. petalodes.* From C. G. Lloyd's illustration of the type.



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13–14. STEREUM PALLIDUM.—15. S. ELEGANS.—234. S. DECOLORANS.—16. S. RADICANS.—17. S. PUSIOLUM.—18. S. GLABRESCENS.—19. S. FISSUM.—20. S. CYPHELLOIDES.—21. S. HARTMANNI.—22. S. CRASPEDIUM.—23. S. PETALODES

Explanation of Plate

PLATE 4

Fig. 24. *S. proliferum.* Type.

Fig. 25. *S. caespitosum.* Type.

Fig. 26. *S. fuscum.* Specimen collected at Middlebury, Vt., by E. A. Burt.

Fig. 27. *S. rufum.* Specimen collected at Middlebury, Vt., by E. A. Burt.

Fig. 28. *S. Pini.* Specimen collected at Chocorua, N. H., by W. G. Farlow, 37.

Fig. 29. *S. purpureum.* Specimen collected at North Ferrisburg, Vt., by E. A. Burt.

Fig. 30. *S. rugosiusculum.* Specimen collected at Creve Coeur Lake, Mo., by E. A. Burt.

Figs. 31 and 32. *S. Murrayi.* Fig 31, old reflexed specimen collected at Grand View Mt., Vt., and Fig. 32, resupinate specimen collected at Ripton, Vt., both by E. A. Burt.

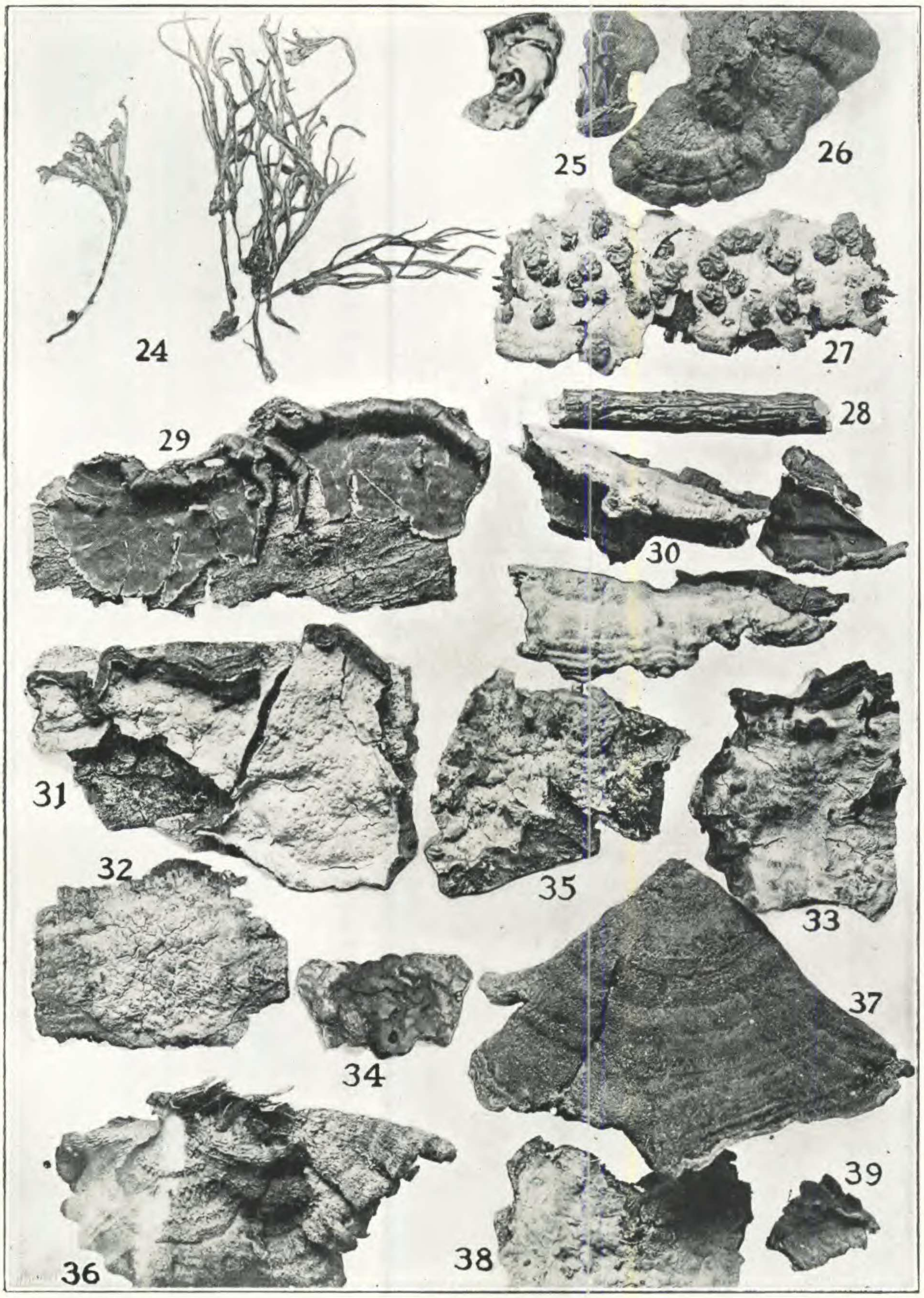
Fig. 33. *S. saxitas.* Type.

Figs. 34 and 35. *S. styracifluum.* Fig. 34, type; Fig. 35, specimen collected at Auburn, Ala., by F. S. Earle & C. F. Baker.

Fig. 36. *S. gausapatum.* Specimen collected at Toronto, Canada, by T. Langton.

Fig. 37. *S. australe.* Type.

Figs. 38 and 39. *S. rugosum.* Fig. 38, specimen collected at Ithaca, N. Y. by G. F. Atkinson; Fig. 39, reflexed specimen collected in Epping Forest, England, by E. A. Burt.



BURT—THELEPHORACEAE OF NORTH AMERICA

24. STEREUM PROLIFERUM.—25. S. CAESPITOSUM.—26. S. FUSCUM.—27. S. RUFUM.—28. S. PINI.—29. S. PURPUREUM.—30. S. RUGOSIUSCULUM.—31–32. S. MURRAYI.—33. S. SAXITAS.—34–35. S. STYRACIFLUUM.—36. S. GAUSAPATUM.—37. S. AUSTRALE.—38–39. S. RUGOSUM.

EXPLANATION OF PLATE

PLATE 5

Fig. 40. *S. sanguinolentum.* Specimen collected in Little Notch, Vt., by E. A. Burt.

Fig. 41. *S. sulphuratum.* Specimen collected at Auburn, Ala., comm. by F. S. Earle.

Fig. 42. *S. hirsutum.* Specimen collected at Smugglers Notch, Vt., by E. A. Burt.

Figs. 43–45. *S. fasciatum.* Fig. 43, young effuso-reflexed stage, and Fig. 44, old stage with attachment by umbos, both collected at Middlebury, Vt., by E. A. Burt; Fig. 45, specimen collected at Formosa, Japan, by S. Kusano, II. 16.

Fig. 46. *S. lobatum.* Specimen collected at Lake City, Fla., by P. L. Ricker, 893.

Fig. 47. *S. versicolor.* From Berkeley's illustration of the type.

Fig. 48. *S. rameale.* Specimen collected at Arlington, Mass., by E. A. Burt.

Fig. 49. *S. sericeum.* Specimen collected at Middlebury, Vt., by E. A. Burt.

Fig. 50. *S. pubescens.* Type.

Fig. 51. *S. conicum.* Type.

Fig. 52. *S. vibrans.* Specimen collected at Rose Hill, Jamaica, by F. S. Earle, 303.

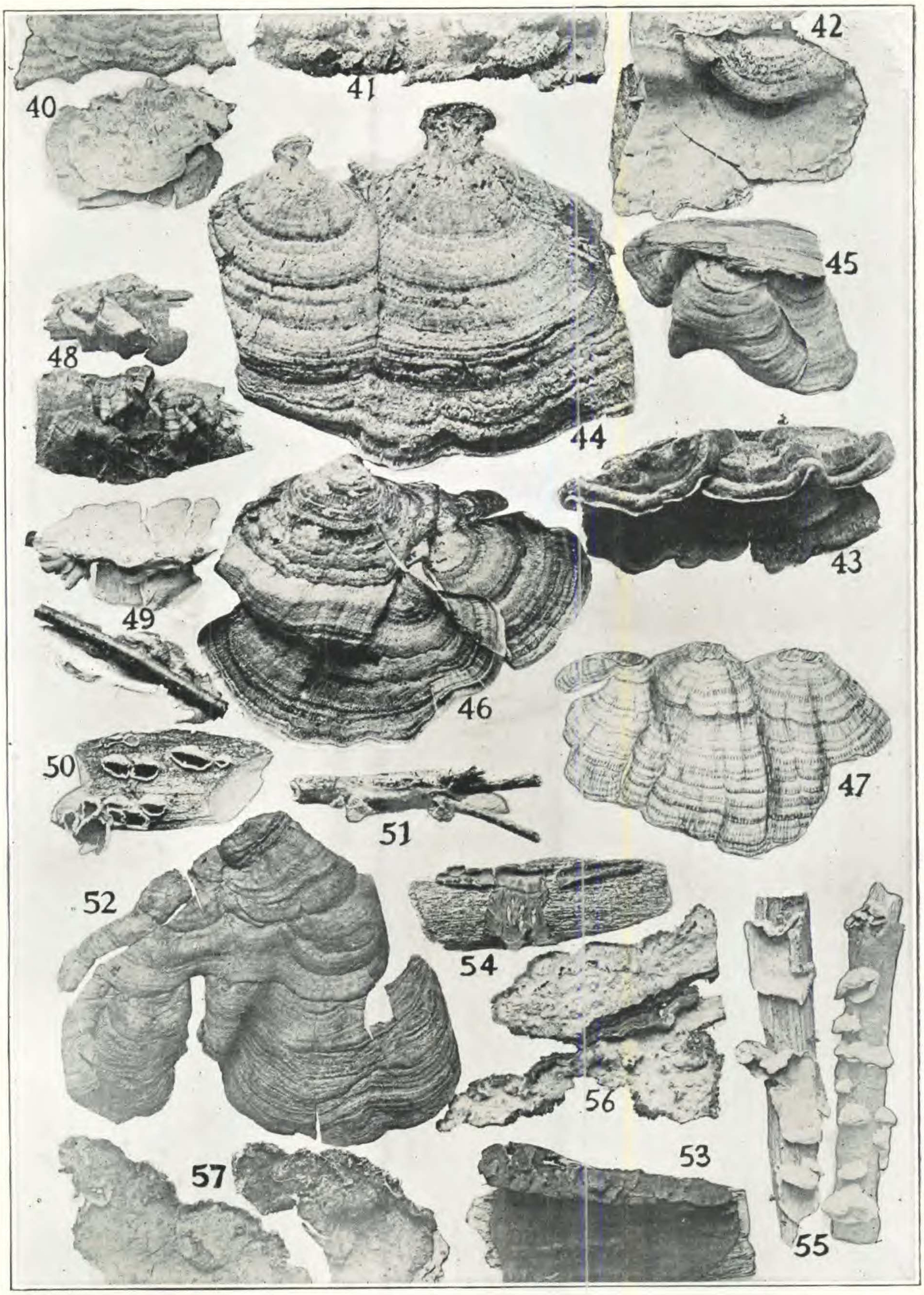
Fig. 53. *S. radiatum.* Specimen collected at Harraby, Ontario, by E. T. &. S. A. Harper, 636.

Fig. 54. *S. patelliforme.* Type.

Fig. 55. *S. ochraceo-flavum.* Specimen collected at Albany, N. Y., by H. D. House.

Fig. 56. *S. abietinum.* Specimen collected at Smugglers Notch, Vt., by E. A. Burt.

Fig. 57. *S. ambiguum.* Specimen collected at Ripton, Vt., by E. A. Burt.



BURT—THELEPHORACEAE OF NORTH AMERICA

40. STEREUM SANGUINOLENTUM.—41. S. SULPHURATUM.—42. S. HIRSUTUM.—43-45. S. FASCIATUM.—46. S. LOBATUM.—47. S. VERSICOLOR.—48. S. RAMEALE.—49. S. SERICEUM.—50. S. PUBESCENS.—51. S. CONICUM.—52. S. VIBRANS.—53. S. RADIATUM.—54. S. PATELLIFORME.—55. S. OCHRACEO-FLAVUM.—56. S. ABIETINUM.—57. S. AMBIGUUM.

EXPLANATION OF PLATE

PLATE 6

Fig. 58. *S. rugisporum.* Specimen collected at Flagstaff, Ariz., by W. H. Long, 21307.

Fig. 59. *S. umbrinum.* Specimen reflexed on both sides, collected at Valley Park, Mo., by E. A. Burt.

Fig. 60. *S. papyrinum.* Specimen on under side of a small limb and reflexed on both sides, collected at Alto Cedro, Cuba, by Underwood & Earle, 1481.

Fig. 61. *S. Earlei.* Type.

Fig. 62. *S. Chailletii.* Reflexed specimen collected at Albuquerque, N. M., by W. H. Long & P. W. Seay, 21313.

Fig. 63. *S. ferreum.* Reflexed specimen collected at Cinchona, Jamaica, by W. A. & E. L. Murrill, 458.

Fig. 64. *S. cinerascens.* Specimens collected at Middlebury, Vt., by E. A. Burt.

Fig. 65. *S. magnisporum.* Type.

Fig. 66. *S. spumeum.* Specimen collected at Cordoba, Mexico, by W. A. & E. L. Murrill, 1214.

Fig. 67. *S. erumpens.* Type.

Fig. 68. *S. sulcatum.* Type.

Fig. 69. *S. subpileatum.* Specimen collected at St. Martinville, La., by A. B. Langlois.

Fig. 70. *S. sepium.* Type.

Fig. 71. *S. albobadium.* Specimen collected at Seven Locks, Md., by P. L. Ricker, 1007.

Fig. 72. *S. heterosporum.* Type.

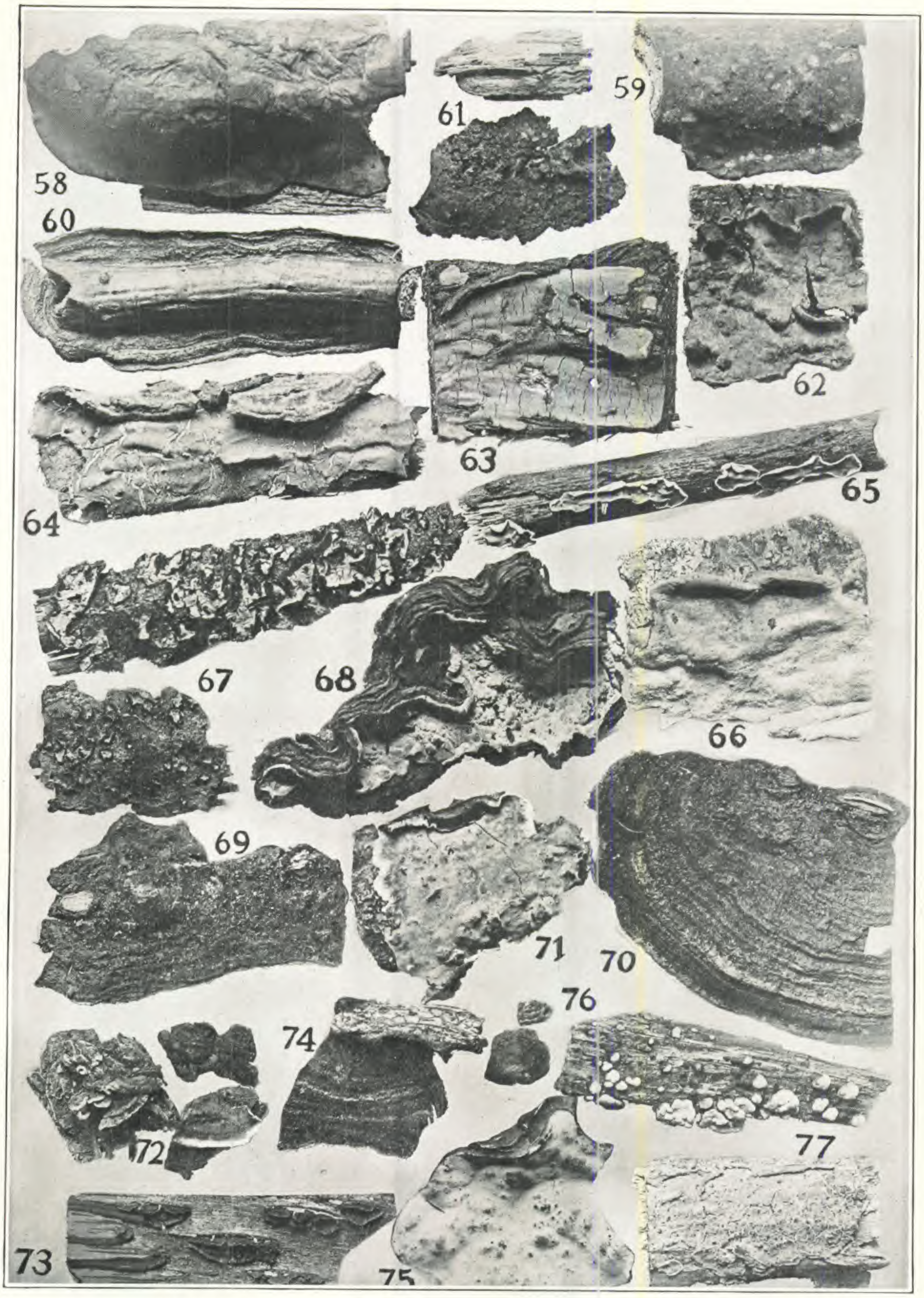
Fig. 73. *S. versiforme.* Specimen collected at White Plains, N. Y. by L. M. Underwood.

Fig. 74. *S. insigne.* Specimen collected in Florida by C. G. Lloyd, 4846.

Fig. 75. *S. durum.* Type.

Fig. 76. *S. frustulosum.* Specimens collected at Creve Coeur, Mo., by E. A. Burt.

Fig. 77. *S. roseo-carneum.* Specimen collected at Arlington Heights, Mass., by E. A. Burt.



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58. STEREUM RUGISPORUM.—59. S. UMBRINUM.—60. S. PAPYRINUM.—61. S. EARLEI.—62. S. CHAILLETII.—63. S. FERREUM.—64. S. CINERASCENS.—65. S. MAGNISPORUM.—66. S. SPUMEUM.—67. S. ERUMPENS.—68. S. SULCATUM.—69. S. SUBPILEATUM.—70. S. SEPIUM.—71. S. ALBOBADIUM.—72. S. HETEROSPORUM.—73. S. VERSIFORME.—74. S. INSIGNE.—75. S. DURUM.—76. S. FRUSTULOSUM.—77. S. ROSEO-CARNEUM.

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STUDIES IN THE PHYSIOLOGY OF THE FUNGI
XI. Bacterial Inhibition by Metabolic Products

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Considerable work has been done on the early phases of growth of bacteria in liquid media. Rahn ('06), Coplans ('07), Penfold ('14), Chesney ('16), Salter ('19), and others have shown quite definitely the factors involved in the lag phase of growth preceding the phase of logarithmic increase. They have demonstrated that the lag can be eliminated if the transfers are made during the period of logarithmic increase, but that certain factors such as difference in temperature, composition of the medium, or the age of the culture will produce a latent period immediately following the transfer.

Data on the later growth periods of bacteria are less extensive. Based on the total number of viable bacteria in the culture, the growth curve can be traced roughly as follows: It rises abruptly at first, which is the phase of logarithmic increase, then ascends more gradually until the peak is reached, and finally descends until the culture is sterile. The influence of inhibitory factors is most clearly seen in the later periods, those following the phase of logarithmic increase, the study of which is of fundamental and practical importance both in killing pathogenic bacteria, that is, hastening the decline in the growth curve, and in prolonging the life of useful cultures, suspending this decline. In the work presented here, emphasis is placed on the later periods of growth and on the influence of the products of a growing culture on the path of the growth curve.